Mekelle University

College of Business and Economics

Department of Cooperatives Studies

Multivariate Analysis of Members' Marketing Participation in Dairy Cooperatives in Arsi Zone, Oromia Region, Ethiopia.

By: Kedir Amare Furo

A Thesis submitted in partial fulfillment of the requirements of the Master of Art degree in Cooperative Marketing

Major Advisor: Dr. GB Pillai (Professor)

June, 2010

Declaration

This is to certify that this thesis entitled *as* **'Multivariate Analysis of Members' Marketing Participation in Dairy Cooperatives in Arsi Zone, Oromia Region, Ethiopia'** is submitted in partial fulfillment of the requirements for the award of the degree of M.A., in Cooperative Marketing to Mekelle University, College of Business and Economics, ,through the Department of Cooperative Studies, done by Mr**. Kedir Amare Furo, ID.No. CDANR/PR 0021/01** is an authentic work carried out by him under my guidance. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Name of student: Kedir Amare Furo Signature_____ Date_____

Name of supervisor: Dr.G. B. Pillai (Professor) Signature_____

Date_____

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Name: Kedir Amare Furo Signature _____

Place: Mekelle University, Mekelle, Ethiopia.

Date of submission: _____

Dedication

This thesis manuscript is dedicated to my late father, Ato Amare Furo,who sacrificed much to bring me up to this level but not lucky to see the final fruits of my effort.

Multivariate analysis of members' marketing participation in dairy cooperatives in Arsi zone, Oromia region, Ethiopia.

Abstract

The study has been conducted with the main objective of analyzing members' marketing participation and factors influencing their participation in dairy cooperatives in Arsi Zone of the Oromia Regional State, Ethiopia. In this study, three stage random sampling method was adopted for the selection of the respondents. The study has been employed survey method with field orientation and structured interview schedule was used as a tool for collecting data from members. 151 members from 4 dairy cooperatives were selected at random for the study using probability proportionate to size of the population (PPS).Additionally, 56 participants of FGD (32 dairy cooperative officials, 15 reputed elders of the local community, 4 village (PA) leaders, and5 marketing experts from zonal and woreda promotion offices) were involved in the study. Karl Pearson's Coefficient of Correlation(r), *the Ordinal Logistic Regression Model, and preference indices were used to analyze the data.*

The survey result revealed that most of the dairy cooperative members, i.e. 89 members (58.9%) were regular participants in decision making with respect to dairy marketing through their dairy cooperatives and involving in the dairy marketing functions of the dairy cooperatives simultaneously and 61 members (40.4%) participated some times in the same.

Number of milking Cows owned, Position of a member in the cooperative, Training undergone in dairy marketing, Information seeking behavior, and Communication skills were found to be positively correlated with members' marketing participation while Distance to the nearest Dairy Cooperative's milk collection centre was negatively correlated with the same. The parameter estimates of the ordinal logistic regression model has shown that Experience in Dairy Marketing

, Milk Purchased through Cooperatives , Training Undergone in Dairy Marketing , and Perception about Cooperatives were among the significant factors affecting marketing participation of members in dairy cooperatives.

Lack of market access for members' milk especially during the fasting months, Lack of improved dairy cows, Lack of facilities (cooling, transportation, and storage), shortage and poor quality of animal feeds, Lack of credit to expand dairy activities, Poorly developed infrastructure like roads, water supply, and electric power, high cost of exotic breeds, high transaction costs and ever increasing in the price of animal feeds, members' low attention towards dairy sector, and low commitment and negligence of Cooperative officials in discharging their responsibilities were among the main constraints perceived by members of dairy cooperatives and participants of FGD. In order to tackle the main constraints of dairy cooperatives so far identified and improve marketing participation of members in their dairy cooperatives, the dairy stakeholders (members, cooperatives, Government, and NGOs) should think of better market access for dairy products. In addition to this, there must be a national level dairy industry program like Operation Flood program of India so as to facilitate the enhancement of milk production in the country. The financial needs can be met from the sale of material assistance (primarily from the members of dairy cooperatives) received in the form of milk and milk products, and ploughing back the funds for the development activities.

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Last but not least, I would like to express my sincere appreciation and gratitude to all my parents and relatives for the moral support and concerns. Finally, but most importantly, I would like to thank the almighty Allah, who gave me patience to overcome all challenges during the course and thesis works and the opportunity to peruse my studies at Mekelle University where I gained much.

BIOGRAPHICAL SKETCH

The author was born in Ziway Dugda district, Arsi Zone of Oromia Region, in January1978. He attended his primary, secondary, and high school educations at Ziway Minch, Katar Fuafuate, and Assela Comprehensive schools (found in the same Zone) respectively. He completed his secondary school education in April 1995.

He joined the then Awassa College of Agriculture in November 1996 and completed his Diploma studies in General Agriculture in July 1997. After graduation, the author was employed in Oromia Cooperative Promotion Bureau, Arsi Zonal Department and served as cooperative promoter, planning and programs as well as marketing and credit expert until November 2003.Then after, he joined the then Debub University (now Hawasa University) and completed his Bachelor of Science(BSc) Degree in Rural Development and Family Sciences in July 2006. Soon after his graduation, he returned back again to his mother department and served there until he left to Mekelle University to pursue his post graduate studies at College of Business and Economics, Department of Cooperative Studies (Specialization in Cooperative Marketing) in November 2008.

Abbreviation and Acronyms

ADLI	Agricultural Development Led Industrialization
AI	Artificial Insemination
AMUL	Anand Milk Union Ltd
ARDU	Arsi Rural Development Unit
AZCPO	Arsi Zone Cooperative Promotion Office
CADU	Chilalo Agricultural Development Unit
DDE	Dairy Development Enterprise
EPID	Extension and Projects Implementation Department
ESAP	Ethiopian Society of Animal production
FAO	Food and Agricultural Organization
FCA	Federal Cooperative Agency
FDRE	Federal Democratic Republic of Ethiopia
FINNDA	Finnish International Development Agency
GDP	Gross Domestic Product
ICA	International Cooperative Alliance
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IPMS	Improving Productivity and Market Success
MLR	Multiple Linear Regression
MOI	Ministry of Information
MPP	Minimum Package Programme
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
OCPB	Oromia Cooperative Bureau
PASDEP	Plan for Accelerated Sustainable Development to End Poverty
SDDPP	Smallholder Dairy Development Pilot Project
SDPRP	Sustainable Development Poverty Reduction Programme

SIDA	Swedish International Development Agency
SNF	Solid Not Fat
TWCPO	Tiyo Woreda Cooperative Promotion Office
UNDP	United Nations Development Program
UNFP	United Nations Food Program
UN OCHA	United Nation Office For Coordination Of Humanitarian Affairs
UNRRA	United Nations Relief and Rehabilitation Administration
WADU	Wolayita Agricultural Development Unit
WFP	World Food Program

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Chapter I: Introduction

1.1 Background of the study

Ethiopia is one of the largest countries in Africa both in terms of land area (1.1 million km^2) and human population *(77.4 million*) (UNFP, 2005). Agriculture is the basis of the Ethiopian economy. It accounts for about 52 per cent of the GDP and 90 per cent of the total export revenue and employs 85 per cent of the country's labour force. It is the major source of raw material for agro–processing industries and of foreign exchange earnings (IFPRI, 2007). In spite of demonstrated potential to boost agricultural production, sustainable agricultural productivity increase has not been achieved (Eleni *et al*., 2003). Ethiopian agriculture is characterized by its subsistence nature and ineffective and inefficient agricultural marketing system which are believed to be the major factors for the low growth rate of agricultural GDP (FDRE, 2006).

A significant proportion of the country's livestock is found in Oromia. According to CSA, Statistical Abstract, 2005, Birhanu, et. al., 2007, Oromia had about 46% of the country's total livestock population (excluding nomadic areas and urban holdings). In the mentioned year, Oromiya had about 17.2 million cattle, 7 million sheep, 4.8 million Goats, 960,000 horses, 150,000 mules, 1.7 million donkeys and 140,000 camels, 13 million poultry and 2.5 million beehives (excluding nomadic areas and urban holdings). Despite the potential, there are problems of low productivity, *low awareness on technologies, marketing*, widespread animal diseases, poor feeding system, traditional husbandry practices, etc.

Transforming Ethiopian agriculture from its current subsistence orientation into market oriented production system forms the basis of the agricultural development strategy of the Government of Ethiopia (Berhanu et al., 2006). Ethiopia adopted an Agricultural Development-Led Industrialization (ADLI) strategy, which initially focused on food crops and natural resources management. Recently, the country has added *market orientation* to this strategy (Eleni *et al.,*

2006). In 1994, the government of Ethiopia expressed renewed interest in collective action to promote greater market participation by small holders (FDRE 1996 and FDRE 1998). It re-affirmed in the Sustainable Development and Poverty Reduction Program (SDPRP) (FDRE 2002) and the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) (FDRE 2005), in which cooperatives are given a central role in the country's rural development strategy (Bernard, Eleni, Alemayehu, 2007).

Cooperatives which are commonly defined as "an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through jointly owned democratically controlled enterprise"(ICA,1995) play key role in the poverty reduction and sustainable development of a nation (MOI, 2003). In a subsistence agriculture where smallholders are engaged in uneconomic and fragmented production, the role of cooperatives in improving the agricultural marketing system has been fully recognized. Based on the fundamental principle of "*the future belongs to the organized*" expanding and strengthening of cooperatives is the underlying approach of the government in improving the marketing system (NEPAD, 2005).

Cooperatives in Ethiopia remained to be passive in changing the livelihood of most Ethiopians despite the fact that the legal framework was found back in 1960. Ethiopian cooperative movement has undergone drastic changes and transformation in the past. With all its demerits, it paved the way to the foundation of the modern cooperatives. According to report by FCA (2009), there are *26,128* primary cooperatives with over Birr *1.003* Billion capital and *5.27* million individual memberships. In order to strengthen the bargaining power of primary cooperative societies, 143 cooperative unions having capital Birr 143.6 million have been established (FCA, 2008).

In Oromia, the evolution of modern cooperatives emerged during 1987. According to OCPB (2009), there are 8928 primary cooperatives with total membership of 1,619,811 of which 1,405,132(86.75%) are male and 214,679(13.25%) are female. The capital and savings of these primary cooperatives is 251,313,508.00 and 116,835353.00 Birr respectively. There are also 68 different types of cooperative Unions having 1,610 primary cooperatives as membership and 72,284,187.00 Birr capital. Recently, one Farmers Cooperative Federation with 40 cooperative unions as member affiliates and 20 million birr initial capital has been organized in the region.

All these cooperatives are registered and operating in the foreign and international markets as per proclamations No 147/1998 and its amended proclamation No 402/2004. Moreover, the region has one Cooperative Bank having 27 branches in different parts of the region. The start up capital of the bank was 110 million birr. Currently, it has reached to 155 million birr capital and total asset of more than one billion birr.

For many people, dairy production is the most important income generator. Dairying provides a regular income to farmers in different parts of Ethiopia. Different authors confirmed that the smallholders' dairy package production system is a powerful means of raising farm incomes and welfare (Ahmed *et al*, 2003).For the marketing and management of dairy, knowledge and members' participation are vital. Given the considerable potential for smallholder income and employment generation from high-value dairy products (Staal, 2001), development of the dairy sector in Ethiopia can contribute significantly to poverty alleviation (Mohamed, et al., 2004). Per capita consumption of milk in Ethiopia is as low as 17 kg per head per year while the average figure for Africa is 26 kg per head (Gebre wold et al., 1998). As a matter of fact, the existing excess demand for dairy products in the country is expected to induce rapid growth in the dairy sector. Factors contributing to this excess demand include the rapid population growth, increased urbanization and expected growth in incomes (Mohamed, et al., 2004).

As said by Staal (2001), dairy cooperatives have typically been formed in response to a fundamental farmer problem: the inconvenience of small quantities of milk to market. Milk is perishable which requires special handling to insure quality and shelf life. Holding milk where infrastructure may be lacking can be costly and risky. On the other hand, the rapid delivery of small quantities of milk to market may not be practical or economic; some smallholder producers may market no more than 1-2 liters of milk on a given day. The practical collection and transport of milk to market therefore usually requires some bulking, and the need for speed and reliability requires good organization of that bulking. As a consequence, there is strong incentive for smallholder producers to try to form collective organizations to meet these needs, which are dairy cooperatives.

Marketing Participation has been considered as an essential part of cooperative activities from the time the first society was found. One of the principles laid down by the ICA is that cooperatives should make provisions for the members' economic participation with their society.

Since the environment in which dairy cooperative exist continually changes, there is continually a need to learn *about participation level of members, factors influencing their extent of participation and possible remedies to improve ineffective participation*. This issue is mandatory for members to adjust themselves to a *market oriented environment*.

There are several reasons why cooperatives fail or succeed, in addition to economic and business factors. A cooperative may fail if it ignoring members' needs and satisfaction, members are a vital part of any cooperative organization and their active participation in and loyalty to a Cooperative's business is integral for the success of the cooperative (*Goddard, 2002*, cited in Sanjib, 2007,). Most cooperatives check the eligibility of an applicant for membership, but checking members' participation and identifying the inactive members and their reasons is forgotten. Therefore, this study tries to assess the members' participation and the influencing factors of participation in dairy cooperatives.

Even though, the potential of dairy cooperatives in contributing to the improvement of the small holders' dairy farmer-member is immense, it is found out that due to lack of knowledge, awareness, and training in marketing dairy products, they were not able to drive the required benefit from their dairy cooperatives (IPMS, 2005). So far, there is no much empirical evidence as to the factors influencing members' participation in dairy cooperatives' marketing.

The study has conducted in Arsi Zone, where one potential dairy producer *woreda* is selected. In Arsi zone, there are 24 dairy cooperatives in nine districts with membership of 1030 individuals with total capital of Birr 324,437(AZCPB, 2009).

1.2 Statement of the Problem

The shift from a centrally controlled economy to a market economy in the dairy products sector has inspired the farmers to produce more dairy products each year and to improve dairying practices by using proper inputs. According to Ahmed, et al., (2003), in their recent study concluded that, over the last decade following the political changes in 1993, the dairy sector in Ethiopia has shown considerable progress. The dairy sector in Ethiopia is expected to continue growing over the next one to two decades given the large potential for dairy development in the country, the expected growth in income, increased urbanization, and improved policy environment (Ahmed, et al., 2003). As the market liberalization process continues, the essential in the growth strategy is the role of agriculture, particularly the development of an efficient and flexible dairy products marketing system, for which adequate and active members' participation in dairy marketing is imperative. The means by which these objectives are to be achieved relies on 'transforming poor farmers, both men and women, from producing principally for their own households to producing for the market. The focus is to reorient them towards commercial agriculture in order to have a momentous impact on poverty eradication in the country'.

According to Debrah and Birhanu (1991), market access poses a key bottleneck to the expansion of smallholder milk production and processing. Since the present dairy products marketing system in Ethiopia is young, not all market mechanisms are expected to be operational and also demand a *profound member's participation in marketing dairy products*. Difficult market access restricts opportunities for income generation. Remoteness results in reduced farm-gate prices; increased input costs; and lower returns to labor and capital. This, in turn, reduces incentives to participate in economic transactions and results in subsistent rather than market-oriented production systems. Sparingly populated rural areas, remoteness from towns and high transport costs all pose physical barriers impeding market access. Transaction costs such as lack of information about markets, lack of negotiating skills, and lack of collective organizatio*n* are other impediments to market access (Halloway et al, 2000).

Moreover, if and when the markets are available, their functioning is constrained by various problems and obstacles: *imperfect market information for buying and selling dairy*; lack of cash and credit availability to finance short-run inventories and processing operations; insufficient

facilities for storage and transportation; no uniform system of common grade standards to facilitate trading at a distance; lack of management skills; and unsuitable legal codes to enforce contracts, lack of knowledge and favorable attitude towards the market, inadequate skill (Mbogoh, et.al, 1994). In addition to this, the members of Ethiopian Orthodox Church abstain from consuming milk and animal products about 150 days per year during the fasting periods. The surplus milk has thus to be converted in to butter and cottage cheese (*Ayib*) (Debrah and Birhanu, 1991). Co-operatives increase the participation of smallholders in fluid milk markets in the Ethiopian highlands (Mohamed et al., 2004). Cooperatives should also be given enough technical and financial support as they are serving as an important market outlet for smallholder producers. The nature of milk production as an agricultural activity, and of milk as an agricultural product, is the main reason for the dominant role played by producer owned co-operatives in milk marketing. The key principles underlying the establishment and operation of marketing co-operatives are to do with bargaining power and economies of scale in activities. Co-operative marketing evolves because on one side of the trade of milk are many small-scale producers with a product which perishable and costly to transport. On the other side of the market in the local area is a single relatively large buyers or a small number of relatively large buyers who assemble, process, distribute and retail milk. These imbalances of market power have led to producers' co-operatives being the main stay of dairy marketing (Falvey, *et al.,* 1999).

Berhane and Workneh (2003), in their review, indicated the very useful involvement of the government of India at every step of the development for expansion of dairy cooperatives in the country for the success of dairying and suggested that the Anand pattern of dairy development (India) can be emulated at least around the major milk sheds in Ethiopia, for instance around Nazareth, Dire Dawa, Harar, Bahir Dar, Gondar, Awassa, Jimma and Assela (one of the present study area). As demonstrated in India, dairy marketing cooperatives could provide farmers with continuous milk outlets, and easy access to essential inputs such as artificial insemination (AI), veterinary services and formulated feeds. Dairy cooperatives are supposed to help to trigger a series of positive developments in the sub-sector; hence strengthening the existing group marketing activities and formation of new cooperatives in different parts of the country (Berhane and Workneh, 2003).

Dairy cooperatives contribute a lot especially with regard to linking producers to market and by providing input supply. Among the major constraints for dairy marketing in Ethiopia included availability and costs of feeds, shortage of farm land, discouraging marketing systems, waste disposal problems, lack of improved dairy animals, poor extension and animal health services, and knowledge gap on improved dairy production, processing and marketing. Therefore, the farmers' level of participation in dairy marketing becomes important as a take-off point towards making a successful dairy marketing. This study mainly focuses on analyzing the level of members' participation, factors influencing their participation, constraints in effective members' participation in marketing of dairy cooperatives located in Arsi Zone.

1.3. Significance of the Study

The recently formulated Rural Development Policies and Strategies stress that; an efficient domestic agricultural commodity marketing system is essential to stimulating and sustaining growth and development in the food and agriculture sector. Moreover, the policy clearly states the prospects for economic recovery rest with the successful transformational development of the domestic commodity marketing system to provide greater market incentives for poor smallholder farmers *to participate effectively* and consistently in the domestic food and agriculture markets as commercially oriented. Realization of this vision demands in particular the effective and efficient development of smallholder's dairy marketing system through cooperatives. Members of dairy cooperatives would have access for modern techniques that can facilitate their marketing activities only through *effective and consistent marketing participation in their dairy cooperatives*. For formulating appropriate strategies for members' effective participation in dairy marketing, the assessment of the level of members' participation, factors influencing their participation, and constraints in effective participation is inevitable. Dairy cooperatives, members, and external stakeholders at all levels might use this study as a corner stone for designing and implementing appropriate strategies for effective marketing participation of members in their dairy cooperatives in Arsi zone, and to other areas with similar socio-economic conditions. The research study, by investigating the major factors that hinder members of dairy cooperatives from participating effectively in marketing of dairy products in Arsi Zone, will provide realistic basis for planning the appropriate guidelines that enhance further improvement.

It would also help those governmental and non-governmental institutions and agencies having interest in dairy cooperatives to know the level of members' participation, factors influencing, and prevailing constraints in effective members' participation in marketing of dairy products.

1.4. Limitation of the Study

This study was conducted in Arsi Zone, where one district was selected randomly. The study is limited by finance, time and distance between villages. The study mainly focused on assessing the level of members' marketing participation, factors influencing their marketing participation, and main constraints in effective members' marketing participation in dairy cooperatives. Even though, the number of dairy cooperatives is extensive through out the zone, in most of the *woredas*, the dairy cooperatives are at infant stage.Due to limitation of finance and time,only one District from Arsi zone was selected at random. This is actually a limitation. In spite of the limitation, it is strongly believed that the findings of the study can be of much use in preparing the frame for the improvement of members' participation in Arsi zone in dairy marketing.

1.5 Objectives of the study

General objective:

The General objective of the study is to investigate members' marketing participation and factors influencing their participation in dairy cooperatives in *Arsi Zone* of Oromia Regional State, Ethiopia.

Specific objectives:

This study is conducted with the following specific objectives that are set to help realize the major objective:

1. To assess the level of marketing participation of members in their dairy cooperatives;
2. To identify the factors influencing members' marketing participation in dairy cooperatives;
3. To examine the constraints in effective marketing participation of members in dairy cooperatives; and
4. To develop guidelines for improving participation of members in dairy marketing.

1.6. Hypotheses

The following hypotheses were intended to be tested in this research project.

1. Members of dairy cooperatives have low participation in dairy marketing.
2. There is no significant relationship between marketing participation of members in dairy cooperatives and their level of education.
3. There is no significant relationship between the members marketing participation in dairy cooperative and their farm size.
4. There is no significant relationship between members marketing participation in dairy cooperatives and their exposure to extension.
5. There is no significant relationship between the number of dairy cows owned by members and their marketing participation in dairy cooperatives.

1.7. Research questions

1. What is the marketing participation level of members in cooperative dairy marketing?
2. What factors affect the marketing participation of members in cooperative dairy marketing?
3. What are the constraints faced by members of dairy cooperatives in dairy marketing?
4. What steps are needed for improving participation of members in dairy marketing?

1.8 .Chapter plan

This research project consists of the following chapters:

1. Chapter one comprises *the introduction*, which puts forward the background of the study, objectives, purpose of the study, hypotheses, limitation of the study and chapter plan.
2. Chapter two focuses on the *review of related literature.*
3. Chapter three gives emphasize on *materials and methods* used for the research project.
4. Chapter four deals with *results and discussion* of the research project.
5. The last chapter of the study summarizes conclusions *and recommendations*.

Chapter II: Literature Review

In this chapter, the pertinent conceptual and empirical studies are thoroughly reviewed and presented. The literature review is divided into four sections. The first section deals with the theoretical and conceptual background of cooperatives with special emphasis on *dairy cooperatives* in Ethiopia. The second section focuses on *dairy marketing and their constraints* in Ethiopia. The third section puts forward empirical studies on *dependent and independent variables*. Lastly, *members marketing participation* has been reviewed.

2.1. Concept of cooperatives

A cooperative is a democratic organization engaged in the market place, providing goods and services. It is based on people, not capital or government direction. As a source of credit, food, social protection, shelter and employment, cooperatives play an important role. According to *Stirling* (2006), The United Nations estimated (in 1994) that the livelihood of *three billion* people was made more secure by cooperatives. At least 800 million are members of cooperatives and 100 million are employed by them (*Stirling, 2006).*

2.2. The present status Cooperatives in Ethiopia

According FCA (2009), there are *26,128* Primary cooperatives with a membership of *5.27* million individuals and *1.003* Billion birr capital. 112 secondary level cooperatives have entered in to the market. In 2006, 48 unions and 112 primary cooperatives have marketed 948,662 Quintal of grain and this constitutes of 3% of the production marketed in the country. During last year, 8 unions have imported 253,750 tons DAP and 100, 000 tons UREA. The market share of cooperatives in fertilizer import has reached 67% and 70% of the distribution network.

In Oromia, the evolution of modern cooperatives emerged 1987. According to OCPB (2009), there are 8928 primary cooperatives with total membership of 1,619,811 of which 1,405,132(86.75%) are male and 214,679(13.25%) are female. The capital and savings of these primary cooperatives is 251,313,508.00 and 116,835353.00 Birr respectively. There are also 68 different types of cooperative Unions having 1,610 primary cooperatives as membership and 72,284,187.00 Birr capital. Recently, one Farmers Cooperative Federation with 40 cooperative unions as member affiliates and 20 million birr initial capital has been organized in the region.

All these cooperatives are registered and operating in the foreign and international markets as per proclamations No 147/1998 and its amended proclamation No 402/2004. Moreover, the region has one Cooperative Bank having 27 branches in different parts of the region. The start up capital of the bank was 110 million birr. Currently, it has reached to 155 million birr capital and total asset of more than one billion birr.

Table1. List of Primary, Secondary, and Tertiary Level Cooperatives in Oromia Region.

S.No.	Type of Cooperative	No. of Coops.		Membership size			Capital	Savings
				Male	Female	Total		
A	Primary Coops.							
1	Agricultural	5163		1242306	118981	1361287	178212510	_
2	Non-Agricultural	1689		96014	17021	113065	32261965	_
3	SACCOs							
	Rural	1565		35144	64698	99833	21514719	8838944
	Urban	573		31668	13988	45656	19324314	107996409
	Total	8928		1405132	214679	1619811	251313508	116835353
B	Unions	Unions	Member primary coops.					
1	Multipurpose	19	619	133310	6002	137312	6435467	_
2	Grain Marketing	23	459	318446	33815	351761	38976088	_
3	Coffee	1	115	70816	3909	74725	17466668	-
4	Dairy	3	32	1422	480	1902	132268	-
5	Forestry	2	12	1732	438	2107	110840	-
6	Cattle Marketing	2	17	1029	362	1391	181567	-
7	Sugarcane	1	7	1026	314	1340	3064682	-
8	Fruits &Vegetables	4	44	2186	363	2549	2932790	-
9	Mineral	3	119	17097	885	17982	1634535	-
10	Rural SACCOs	9	174	3757	10222	13789	732287	-
11	Urban SACCOs	1	12	583	1028	1611	617000	-
	Total	68	1610	551404	57818	909222	72284187	-
C	Farmers' coop. Federation	1	40	599447	57521	656968	20000000	-
	Grand Total	8997		***	***	***		233670706

Source: OCPB, June 2009.

2.3 Market

Market may be defined as “a particular group of people, an institution, a mechanism for facilitating exchange, (Solomon, 2002). The market concept has also been linked to the degree of communication among buyers and sellers and the degree of substitutability among goods. The concept of perfect market, for example, is an abstraction used by economists as a benchmark for evaluating the performance of market situations that deviate from its specifications (John and Sathan, 1988; cited in Solomon, 2002).

2.3 .1 Marketing channels

Marketing channels are sets of interdependent organizations involved in the process of making a product or services available for use or consumption. Marketing channel decisions are among the most critical decisions facing management (Kotler, 2003). The sequence of intermediaries and markets through which goods pass from producer to consumer is known as marketing channel (Kohl and Uhl, 1985). The complex pattern of marketing channels and the part played by each in the total market movement can be shown best in flow charts (Abbott, 1958). The importance of the distribution function in marketing is apparent when one considers the magnitude of goods and services that are transported and sold at millions of locations though out the world. Many experts believe that the distribution decision is the most important marketing decision a company can make. The design of an organization’s distribution system is a key factor in creating customer value and in differentiating one company’s offering from that of another (Anderson and Vincze, 2000). As Anderson and Vincze (2000) noted, the field of distribution is made up to two distinct branches: channels of distribution and physical distribution. Channels of distribution consist of a network of intermediaries that mange a flow of goods and service from the producer to the final consumer. The success of this network depends on relationships among manufactures (producers), wholesalers, retailers, sales representatives, and others. As products move from one intermediary to the next, exchange takes place-exchange of physical goods, intangible services, and value added dimensions. Physical distribution activities include the actual movement of goods and services (i.e., logistics), with a focus on transporting and warehousing them.

A number of well tried and tested channels have been used throughout generations by farmers, and the most important of these will be considered from the point of view of their use for particular commodities, and their individual advantages and disadvantages (Barker, 1989). There

are two particular marketing channels through which farmers dispose of their output. They are marketing channels used by farmers acting independently and in unison.

2.3.2 Channels used by farmers acting individually

When a farmer operates as an individual in the market, his ability to influence that market is negligible. Despite this disadvantage, the bulk of agricultural produce is marketed by farmers acting independently through various outlets (Barker, 1989).

2.3.3 Marketing channels used by farmers acting in unison

One of marketing channels used by farmers acting in unison is cooperative. One of the main aims of cooperation is to reduce the inherent weaknesses of farmer who operates as an individual in the market, since the influence of the individual on the market is severely limited by the relative smallness of his scale of operations compared to the people with whom he is trading. This has long been held that if farmers act in the market, not as individuals, but cooperate in some way to market their produce in unison, and then there will be synergistic returns available because of the increased scale of operation. When farmers cooperate, there is a pooling of a variety of resources, including management and marketing competence and know how (Barker, 1989).

The rationale behind the legislation establishing farmers' rights to form cooperatives is that farmers generally market their crops to large, highly organized, commodity merchant firms or to large processing firms. Since these firms combine expertise and capital, farmers should be allowed to develop their own marketing firms in order to deal (complete) with them on equal footing (Douglass and Norvell, 1983).

2.3.4 Marketing channels of Milk

Milk produced by farmer producers pass various marketing channels before reaching the final consumers. In fact, some amount of milk produced is consumed at household level before entering the marketing channel. Milk marketing cooperatives can be seen as one of the milk-marketing channel. They buy milk from both members and non-members, process it and sell products to traders and local consumers. They also process milk into cream, skim milk, sour

milk, butter and cottage cheese. The informal market involves direct delivery of fresh milk by producers to consumer in the immediate neighborhood and sale to itinerant traders or individuals in nearby towns. In the informal market, milk may pass from producers to consumers directly or it may pass through two or more market agents. The informal system is characterized by no licensing requirement to operate, low cost of operations, high producer price compared to formal market and no regulation of operations. The traditional processing and trade of dairy products, especially traditional soured butter, dominate the Ethiopian dairy sector. Of the total milk produced only 5 percent is marketed as liquid milk due to underdevelopment of infrastructures in rural areas (Sintayehu et al., 2008)

Dairy Marketing Functions

In reference to agricultural commodities, Kohls and Uhl (1985), describe marketing as involving the transformation of goods in *space, time and form* from producers to consumers at the lowest possible cost. In the same vein, Harris (1995), states that a marketing system can be regarded as a multi-layered sequence of physical and other activities, and of transfer of property rights from the farm-gate to the consumer. They further emphasize that marketing systems are inherently complex in structure arguably much more so than is agricultural production. Thus, although trading firms are assumed to buy and sell, in practice they perform many more activities in addition: *brokerage, storage, processing, transport, the finance of trade and the finance of production*. In line with this, nine distinct functions, grouped into 3 major classes, under system of dairy products marketing.

A) Exchange Functions

i. *Collection/Assembly*: - concerns the initial entry of a dairy product into the dairy marketing channel. The function is carried both at rural village level and in town markets through primary dairy cooperatives. The milk collection and assembly takes place at these level

ii. *Distribution*: - involves the sale of the product to the next level hierarchy until it reaches consumers.

B) Physical Functions

iii. *Processing*: - transforms the form of the commodity. This is an important function in dairy marketing, as farmers, and cooperatives need to process milk before selling it.

iv. *Transportation*: - refers to spatial movement of a commodity. Thus, arbitrage over space is especially beneficial to producers or traders in surplus producing areas as it helps them gain better prices, while it as well helps consumers in deficit areas by reducing prices.

v. *Storage*: - relates to maintenance of stocks for a certain period. This utility, in conjunction with capital, enables markets to function over time. Holding capacity of stores, coupled with periodicity and technology, thus becomes an important factor in this function.

C) Facilitating Functions

vi. *Financing*: - refers to the financial investments made by participants in their trade functions listed above. This function, moreover, includes the risk bearing of trading.

vii. *Grading*: - includes the sorting, grading and sometimes packaging of products in terms of both quality and quantity so as to satisfy consumer demands.

viii. Marketing information: - includes information obtained from the market regarding dairy products.

2.4. Cooperative Dairy Marketing in Ethiopia

2.4.1 Dairy Development and Marketing in Ethiopia

According to Heskias (1998) the development of modern dairying in Ethiopia dates back to the *post II World War* time. Ethiopia was then able to get its first batch of dairy cattle through the UNRRA, under the Marshal Plan set to rehabilitate the war torn countries of the Allied forces. These animals served as the core for the start-up of the Holleta dairy farm and the former Shola dairy farm in Addis Ababa. The founding of agricultural High Schools followed by Alemaya College of Agriculture and then the Holleta Research Station, contributed to the initiation of research on dairying and producing *personnel trained in agriculture and livestock.* The establishment of Shola milk processing plant in Addis Ababa and importation of Holstein Friesians from Kenya by the College and government organizations are also other benchmarks in the process of the development (Abaye et al. 1989). The introduction of improved dairying into the peasant sector was first made by the CADU later on called ARDU.

CADU was initiated by the governments of Ethiopia and Sweden. It was fully financed by the Swedish government through SIDA and was implemented under a period of three project phases. The dairy development Programme component of CADU was to improve and promote meat and

milk production in the region. At the start, CADU's rural integrated development Programme dealt with only cattle from the livestock sub-sector. The unit's extension service delivery was in a package form. WADU was implemented in two phases. The objective of WADU was improvement of the welfare of the rural population of the Wolayita zone by increasing crop and livestock production output.

The Minimum Package Programme (MPP), financed by the International Development Association (IDA), was a country wide agricultural Programme launched by the Extension and Projects Implementation Department (EPID) of the then MoA(Ministry of Agriculture). Livestock extension work was included during the phase II. MPP II had wider scope and woreda coverage than MPP I. The drawbacks of MPP include, shortage in animal stock supply constrained the expansion of the work, the socialist regime that took over then discouraged individual dairy farming and this was a major set back for the growth of dairy in the country, etc.

Addis Ababa Dairy Development Project was the beginning of commercial dairy development projects in Ethiopia. It commenced well on schedule in 1972 with a loan obtained from World Bank but ended in 1981 after 8 years of half hearted operation under the Socialist Government. The takeover of the government by the Derg's Socialist regime led to the change of the land tenure system in the country and this was a major reason to the abandoning of many of these privately owned dairy farms by their owners (Abaye et al. 1989).

Selale Peasant Dairy Development Pilot Project, (SPDDPP) a bilateral project financed by the Ethiopian and Finish governments, fostered privately operated smallholder dairy farming approach in 1987 during the socialist period. The project was executed by the Finnish International Development Agency (FINNDA) from 1987 up to 1991. SDDPP recognized *marketing* as the major constrained to dairy development in the potential areas for fluid milk production and aimed at addressing the issue at the Smallhoder level. The project covered only two woredas, one in Oromia and the other in Southern Nations, Nationalities and Peoples region.

Under various agricultural development programs and projects, the dairy sector of Ethiopia has been addressed for nearly the past half century. The extent and intensity under which it has been addressed may vary from one program to another and from project to project. However, it puts into question the whole effort of these past years if one is to seek for a significantly measurable and lasting impact recorded. Although it may not be compared with what was spent or is being

spent on crop agriculture, funds spent in the development and research endeavors of the dairy sector of Ethiopia can not be taken very lightly. Yet even for this humble amount spent, the outcome does not measure up to expectations (Abaye et al. 1989).

Looking at the components of most of these projects, *processing and marketing activities* were areas neglected in the designing, formulations and implementation stages of the projects. Focus was made more on the husbandry, feeding, breeding and health aspects while clearly ignoring organizing and developing marketing and processing aspects. No doubt that this was one of the many elements that contributed for dairy projects for not having a grass root level grip and for not beginning to roll on their own. Producers need to get the best in marketing out of their produce to be motivated and continue to hold on to the job (Heskias, 1998)

According to Heskias (1998), uncoordinated efforts (development, research, training, extension and delivery of inputs) were the major constraints for dairy development in those periods.

2.4.2 Role of Dairy Cooperatives in facilitating marketing

As demonstrated in India, dairy marketing cooperatives could provide farmers with continuous milk outlets, and easy access to essential inputs such as artificial insemination (AI), veterinary services and formulated feeds. Dairy cooperatives are supposed to help to trigger a series of positive developments in the sub-sector; hence strengthening the existing marketing activities and formation of new cooperatives in different parts of the country is vital (Berhane and Workneh, 2003). The history of the dairy cooperative system in India began in 1946 with the establishment of the Anand Milk Union Ltd (AMUL). In 1970, Operation Flood commenced with the objective of establishing a cooperative structure on the Anand pattern (Matthewman, 1993). One of the success factors of the union was found to be the concept of professional management in all its operations. In addition, continuous training was given to all members, officers and employees of the union in different felt needs areas.

Milk marketing cooperatives have been established by the SDDPP. These groups buy milk from both members and non-members, process it and sell products to traders and local consumers. The units also process milk into cream, skim milk, sour milk, butter and cottage cheese. (Sintayehu et al., 2008)

2.4.3 Cooperative Dairy marketing

According to Nakkiran (2002), dairy as a subsidiary occupation has become a standard source of income for the members of cooperatives. Scattered milk producers are united under the fold of cooperatives and averted from the middle men. In India, dairy cooperatives have increased the quantity and quality of milk production as the major producer of milk in the world. Scientific method of rearing dairy animals has increased productivity and yield per cow. Modern methods of cow protection measures have been popularized by dairy cooperatives. The system of milk procurement and payment on week end has increased the confidence of milk producers over their cooperatives. Speedy transport system, chilling plants, byproduct manufacturing etc, have given new trust to the dairy cooperatives. Urban population has been assured of continuous supply of quality milk by the dairy cooperatives (Nakkiran, 2002)

According to FAO/ILRI (2001) dairy product markets typically differ in several key ways: by the types of products handled, and by the number of intermediaries involved, and the role each plays. These two aspects are often linked in that more processed and thus higher value products often involve more intermediaries, each of whom adds some delivery or transformation service to the product. Simple distance between source and sales areas, or the density and scale of the production system, even without product transformation, can however also increase the number of intermediaries, due to the need for assembling, bulking, transporting and distributing.

2.5 Dairy Marketing Constraints

The following are the pertinent constraints in cooperative dairy marketing;

1. Quality of dairy products

In effect, dairy product quality is becoming the overriding problem of dairy marketing. [1]

In fact, various factors combine to compromise the hygienic quality of milk products in Ethiopia: *lack of awareness in the producing families*; the organization of milk supply system themselves, dysfunction of the regulatory systems and the quality control structures. The problem is

[1] *The constraints were gathered after thorough review of literature and discussion with concerned bodies both at the woreda and zonal level.*

compounded by local climatic conditions, where both heat and, at times, humidity do not favor the preservation of the product in optimal conditions due to lack of necessary cold storage facilities. The awareness of cooperatives and their storage facilities significantly affects the quality of dairy product. *Education and training* on standards and grading are major additional instruments for improving the quality of dairy products.

2. Product homogeneity

In almost all markets, however, butter retailers were found to classify the butter product only into two kinds based on maturity: *Lega* and *Bisil* quality. This grading system facilitates the retail channel, but lacks the legal standards necessary either for the domestic or export markets. As long as supply of preferred qualities in the local market is abundant this can be accepted. Besides, butter is currently marketed without standard package and brand names.

4. Access to credit.

The situation of credit constraints and financial relationships in butter trading shows that all marketing agents recognized that access to credit is one of the most important constraints to their businesses. Capital shortages in working capital are the most difficult problem to cooperatives. Since, dairy cooperatives did not either integrated the credit function in to their business or neglected. Members regularly need only “hot borrowing”.

4. Access to market information

Most dairy cooperatives have varied levels of access to information about *supply, demand and price conditions* in the domestic market, and it is too traditional when it comes to members. The types of market information sources that members and cooperatives in general consult are limited. Most of the farmers’ source of market information is from their *neighbors and relatives*. Dairy cooperatives obtained market information mainly through other traders (wholesalers or retailers) in the channel of distribution. Majority of members know very little about prices prevailing in markets other than the nearby market. Nonetheless, due to the variety of sources of market information, the available information is not always *systematic* and *reliable*. Notably, the price information members and dairy cooperatives management committee obtains from such secondary sources is not *timely, accurate, and comprehensive*.

5.* Access to infrastructure*:

One of the bottlenecks for the steady growth of dairy cooperatives is unavailability of infrastructure such as road, electricity, water etc. and in adequate access to the existing infrastructure.

6. Lack of Pricing strategy

Most of the cooperatives do not follow a sound pricing policy and strategy. As members depend on hearsay for the market information, they rely on unreliable source of information in setting their prices.

7. Lack of transportation and storage facilities

As milk is a perishable commodity and its life is shorter than vegetables, effective transportation and storage facilities are vital. Hence, effective use of dairy products by customers depends on the speedy transport system. On the other hand, the distance between the producer and the consumer is wider and the time available for the distribution of milk is short. Only an efficient transport system will ensure smooth supply of milk to consumers.

8. Ineffective procurement policy

The dairy cooperatives have to plan an effective procurement policy every year. Such *procurement planning* is the basis on which all other dairy management activities depend up on. The annual activity of dairy cooperatives is decided on the basis of procurement management. Procurement management is a factor that decides distribution system. Nakkiran (2002) has rightly put that efficient procurement operations ensure the operation of lean season and flush seasons.

9. Defective mode of milk collection.

As a matter of fact, while collecting milk, the milk collector examines the color and smell of the milk before taking the sample. If he suspects any difference he should have refused to receive the milk. In fact, each producer will be given a serial number and that number is continued as long as he supplies milk to the collection center. Whenever a member brings milk to the collection center, his number is noted in the day book and the sample dipper having the same number is used to take out the sample. The sample milk is used for testing the fat and SNF (Solid Not Fat) contents of milk. However, the members of dairy cooperatives do not have sufficient knowledge and skills on the milk collection procedures.

10. Lack of processing of milk and product development

In order to ascertain the quality of milk and to preserve it for a long time, a number of quality tests are to be conducted before milk is processed. After testing the milk from a particular collection centre is dumped in to a *'dump tank'* to measure the weight of the milk and to check the quantity of milk procured with the dispatch memo attached on the cans of that center. Then the milk is immediately sent into the storage tanks. However, the dairy cooperatives mostly don't follow a proper procedure for processing and developing a product.

11. Seasonal fluctuations

Milk production in general has two seasons namely *lean* season and *flash* season. During winter season milk production would be higher. The dairy cooperatives have to balance the demand and supply positions by adopting certain techniques. During the flash season, surplus milk can be converted into condensed milk powder can be reconverted as milk and supplied to consumers. A precondition for the balanced management of seasonal fluctuation is the development and management of chilling plants and by-products plants. A well- organized transport system plays the role here. So as to avert the loss that comes due to seasonal fluctuations, the dairy cooperatives members should be aware of in advance and react accordingly.

12. Low Access to market

Enhancing the development of smallholder farmers to reach markets and engage them in marketing activities poses a pressing development challenge. Difficulty in market access restricts opportunities for income generation. This reduces incentives to participate in economic transaction and results in subsistent rather than market oriented production systems (Ahmed *et al.*, 2003).

13. **Distance of the market from producers:**

Another noticeable problem with regard to dairy marketing is the long distance to reach the dairy market.

14. **Lack of adequate input supply*:***

Even though, the cooperative has an objective to provide input services, they still focus on marketing of dairy products which is not even done effectively, that indirectly affects the marketing of members' dairy production.

15. Inadequate training and technology transfer

Lack of adequate training to members of the cooperatives has also has adverse effect on marketing their dairy product.

16. High cost of transport:

In the selected zone, it was found out the cost of distribution of milk is high, which results the use of animals for dairy transport. In fact, as milk is by nature perishable, it needs the rapid transport facilities at moderate costs.

17. Lack of adequate participation:

Participation is at the heart of the success of dairy cooperatives. Since the production of milk by each member is traditional and backward, the marketed surplus supplied to cooperatives is very less. Normally, members tend to bring to their cooperatives only few liters, in which the most of the surplus are targeted to private firms. Hence, most of the members reflect low commitment and loyalty to their cooperatives.

18. Cultural taboo:

In some pockets of Arsi Zone, milk marketing is considered as sinful, and it leads to discrimination from the elites of the society, as any one who is involved in marketing milk were considered as poor.

According to John MacKillop (2006), marketing constraints affect the growth of the dairy marketing sector include; the existence of limited cold chain, limited distribution system, limited modern retail (self service), limited product awareness, limited consumer buying power, limited packaging choices (Imported packaging are expensive), consumer concerns about quality , and more than 200 fasting days among orthodox Christians. As per the study made by Sintayehu et al (2007), the major constraints in dairy marketing includes; availability and costs of feeds, shortage of farm land, discouraging marketing systems, waste disposal problems, lack of improved dairy animals, poor extension and animal health services, and knowledge gap on improved *dairy production, processing and marketing*.

2.6. Empirical studies on members' marketing participation

2.6.1. Dependent variable

Verma and Rao (1969) confirmed that farmers' training increases the *participation of farmers* in the farm practices over and above those in the control villages. Johnson (1964) recommended that teaching a group of farmers with common interest in the organized classes was the most effective method of disseminating new knowledge on dairy practices and improved participation.

2.6.2 Independent variables

According Deribe (2007) *Age* of women farmers was one of the demographic characteristics hypothesized to influence agricultural information network output negatively and thereby their participation in marketing. Deribe (2007) found out that education is one of the important variables, which increases farmers' participation and access to acquire, process, and use agricultural related information. Low level of education and high illiteracy rate is typical in developing countries like Ethiopia. In fact, education level of farmers is assumed to increase the ability to use agriculture related information in a better way. Alexander (1985) revealed that education had negative relationship with the participation of farmers in agricultural practices.

Consistent with Deribe (2007), *family size* contributes to the variation in getting access to agricultural information. In his study, family size was assumed to have positive relation to knowledge in dairy marketing. It was found out that larger the family size, higher is the possibility to use a combination of technological packages.

The usage of the cooperative as marketing agent requires substantial economic resources of which land is the principal one (Wadsworth, 1991; Klein et al., 1997). It is assumed that the larger the total area of the farmland the farmer owns, the higher would be the output. Farmers with higher level of output expected to use the agricultural marketing cooperatives than those who have not. Therefore, it is expected that this variable would have positive influence on the marketing of milk through the cooperative.

On the same verge, Arumugam (1983) stated that *experience in agriculture* had significant association with the participation of small farmers.

In many studies, *total annual income* was taken as an important variable explaining the distinctiveness of households. Total annual cash income is an important variable explaining the characteristics of households, in that those who have earning relatively high income could probably participate in technology packages and this in turn will expose them to get new information, there by improving their participation in dairy marketing. Arumugam (1983) stated that economic status was found to have significant positive relationship with the participation of small farmers. Information seeking behavior is the degree to which the respondent is eager to get information from various sources on different aspects of dairy marketing. Most studies confirm

that the information seeking behavior of farmers is *low and favors low members participation in dairy marketing*.

According to Deribe (2007) the coefficient of model output indicates *access to credit* was positively and significantly correlated with farmers' participation in dairy farming practices. This means that increased access to credit increases utilization of recommended technological packages. Deribe (2007) found out that the relation between *extension participation* and knowledge of dairy farming was found to be positive and significant, one unit increment in extension participation would bring about 0.371 units increment in the knowledge of farmers regarding dairy farming. This implies that, frequency of contacts or visits of extension agent to farmer is very important to up date the knowledge and skill of farmers on *farm technologies, practices or activities*. Thus, the availability of extension participation in the rural areas is of a paramount importance to farmers.

Deribe (2007) found out that the relation between *extension participation* and knowledge of dairy farming was found to be positive and significant, this means that farmers who have some position in different informal and formal institutions or organizations are more likely to be aware of different type of new information and thereby improve their overall marketing participation. Prakash (1980) reported that a positive and significant relationship between *indebtedness* and adoption of improved agricultural practices in the medium developed areas and the relationship was insignificant in less developed areas between farm size and the members or farmers marketing participation in dairy cooperatives.

Price is one of the effects that the cooperatives pass on their members' economy (Chukwu, 1990). Therefore, if the cooperative charge competitive price for their milk, the member farmers market it through their cooperatives (Wilkins and Stafford, 1982; Fulton and Adamowicz, 1993; Misra et al., 1993; Klein et al., 1997). Therefore, cooperative price influence the marketing of milk. *The proximity of the cooperative for the farmer house* reduces the cost of time and labor that the farmer spent in searching for a buyer for his/her milk. The other advantage is that as the farmer is close (near) to the cooperative, they will have more knowledge about the cooperative

and its benefits (Bishop and McConnen, 1999). Thus, the distance of the cooperative from the farmer house is expected to influence the marketing of milk through the cooperative negatively.

2.7 Members' Marketing Participation in Dairy Cooperatives

2.7.1 Concept of Participation

According to Davis (1969) participation is a mental and emotional involvement of a person in a group situation which encourages him to contribute to goals and shares responsibilities in them.

According to UNO (1979) participation means sharing by people the benefits of development, active contribution by people to development and involvement of people in decision making at all levels of society.

WHO (1982) defined participation as the process by which individuals, families or communities assume responsibility for their own health, welfare and develop the capacity to contribute to their own and community development.

Paul (1987) defined community participation as an active process by which beneficiary or client groups influence the direction and execution of a development project with a view to enhancing their well-being, of income, personal growth, self-reliance or values they cherish.

According to UNDP (1993) participation refers to the close involvement of people in the economic, social cultural and political process that affect their lives. People may, in some cases, have complete and direct control over these processes- in other cases; the control may be partial or indirect. The important thing is that people have constant access to decision making and power.

According to Chowdhry and Gilbert (1996) participation is a generic term covering a broad range of activities ranging from one-shot problem identification exercise (E.g.: Participatory rural Appraisal) to continuing association in which rural communities and individual farm families play more active role.

According to Narayanaswamy and Boraian (1998) the concept of community participation refers to the process by people who involve themselves in analyzing the local situation, identifying major problems, formulating action plans, mobilizing locally available resources, and executing development projects in order to access the benefits extended to the community at large or specific target groups during a given point of time. Field surveys have shown that many potential liquid milk-marketing households are hours distant away from any milk group. Setting up new groups would clearly reduce the travel time to group, and the actual number of households that

would benefit depends on local population densities. It is also important to keep newly emerging milk groups small and geographically limited to ensure proximity and avoid large groups that would tend to increase average travel times (Holloway *et al*., 2000). Another study showed that the creation of new market outlet for fluid milk brought major improvements in the production, marketing and consumption behavior of smallholder households. The new marketing outlet may also promote involvement in more intensive dairying (Nicholson *et al*., 2000).

2.7.2 Importance of Marketing Participation in Cooperative

Co-operatives, by providing bulking and bargaining services, increase outlet market access and help farmers avoid the hazard of being encumbered with a perishable product with no rural demand . In short, participatory co-operatives are very helpful in overcoming access barriers to assets, information, services, and the markets with in which small-holders wish to produce high-value items (Delgado, 1999).

Effective participation of members enables producer co-operatives to offer processors/marketers the advantage of an assured supply of the commodity at known intervals at a fixed price and controlled quality (Delgado, 1999).

They can also provide the option of making collateralized loans to farmers. The schemes also provides better relations with local communities than large scale farms, avoiding the expense and risk of investing in such enterprises, sharing production risk with the farmer, and helping ensure that farmers provide produce of a consistent quality (Delgado,1999).

Dairy development along with the cooperative lines was considered to be the most effective strategy for helping the rural poor without altering the village social structure and providing guaranteed market for milk at fixed prices, supply of cattle feed at a reasonable cost and efficient veterinary and extension services (Ban, 1988).

2.7.3 Types of Participation

Members' Economic participation is one of the seven cooperative principles ratified by ICA in 1995. Members' participation in cooperative is among the most significant pillars of a strong and self-reliant cooperative movement.

Midgley (1986) formulated a typology of four types of likely state's responses to participation in social development as follows:

a) *Anti-participatory*- The state acts on behalf of ruling class, furthering their interests,

accumulation of wealth, and the concentration of power. Efforts to mobilize the mass for participation will be seen as a threat and suppressed.

b) *Manipulative*- The state supports the community participation, but does so for ulterior motives. The state desires to use participation for political and social control and a recognition that community participation can reduce costs of social development programs as it facilitate implementation.

c*) Incremental*- It is characterized by official support for participation ideas, but by an ambivalent approach to implementation that fail to support local activities adequately or to ensure that participatory institutions functions effectively. The state does not opposes participation but fails to provide necessary backing to ensure its realization.

d)*Participatory*- The state approves fully of participation and responds by creating mechanisms for the effective involvement of local communities in all aspects of development.

Pimbert and Pretty (1997) suggested the following levels of participation. They are:

a) *Passive participation*- People participate by being told what is going to happen or has already happened.

b) *Participation in information giving*- People participate by giving answers to questions posed by extractive research and project managers.

c) *Participation by consultation*- People participate by being consulted and external agencies listen to their views. External agencies define problems and solutions.

d) Participation for material sources**-** People participate by providing resources. For example, labor in return of cash or food.

e) *Functional participation*- People participate by forming groups to meet pre-determined objectives relating to the project, which can involve the development or promotion of externally initiated social organizations.

f) *Interactive participation*- People participate in joint analysis, which leads to joint action plans and formation of new groups or strengthening of old ones.

g) *Self mobilization*- People participate by taking initiatives independent of external institutions to change systems.

2.7.4 Factors Affecting Participation

Clark (1991) identified the elements essential for securing active participation of farmers' groups

such as: (1) small homogenous group; (2) supplementary income generation activities; (3) institutional credit; (4) group promoters; (5) training to group members; (6) group savings; (7) ready access to extension service; (8) participatory monitoring and evaluation; and (9) group self reliance. He also observed the indicators of self-reliance of farmers' groups as (1) regulatory of group meetings and level of attendance; (2) shared leadership and member participation in group decision making; (3) continuous growth in group savings; (4) high rates of loans repayment; (5) group problem solving; and (6) effective link with extension and other development services.
Mukherjee (1997) observed that the level of participation tends to fluctuate with passage of time. Sometimes it remains at a low key and then takes off and/or dissipates. While on other occasions, there emerges a high level community participation which slowly moderates itself and becomes steady.
Rehman and Rehman (1998) found out the factors, which determine the nature of participation of the people in development programs such as: (1) the willingness to participate; (2) the desirability to participate; (3) the representative nature of participants in the local bodies in terms of society as a whole or classes and castes; (4) the asset distribution pattern among the participants and the resultant dynamics in inter-relationships; and (5) the conflict of interests between the stakeholders and direct beneficiaries of the development program.

2.7.5 Measurement of' marketing participation and level of participation

Different studies employed different models in order to identify the factors that determine market supply (Vella, 1998; Minot, 1999; Sigelman, 1999; Matshe 2004 cited in Rehima 2005).
Statistical bias may arise when individuals having special characteristics make choice to one group or another (i.e., by individual self selection) and researcher wind up analyzing non-random choice sample (Maddala, 1983). The problem of sample selection bias arises if an individual's participation status reflects self-selection due to a hidden undetermined or exogenous factor, thus producing a non- random sample (Heckman, 1979).This problem can arise in the case of members' decision to participate in cooperatives milk marketing and the magnitude/amount of milk sold by the members.
The Multiple Linear Regression, Binary Logistic Regression or the Binary Logit Model, *Multinomial Logistic Regression,* the Probit, the Tobit, and Heckman's sample selection models are among the commonly used ones.

2.7.6 Definition of concepts

A. **Personal Characteristics**: refers to the variables associated to personal characteristics such as age, marital status, and level of education, experience in dairy marketing.

B. **Socio-economic Factors**: refers to the position of the members in society, which is determined by various social and economic variables such as income, size of land holding and number of milking cows owned.

C. **Situational factors**: indicate the variables of the surroundings influencing respondent's access to participate such as, information seeking behavior, access to credit, extension exposure, *Position of a member in cooperative* and *distance to nearest local market.*

D. **Psychological factors:** consists of the variables of psychological dimension of respondent such as, perception of respondents towards dairy cooperatives and communication skill in cooperative dairy marketing.

E. **Member**: is an individual who has achieved the status of full membership in the dairy cooperative and who participates and/or not participates in the business transaction, social and other aspects. Co-operatives are member driven - owned and controlled by their members.

G. **Dairy product** is defined as milk or any product derived from milk. Within the general class of dairy foods, different products will be differentiated by their physical composition or form, or where the market or consumer differentiates them.

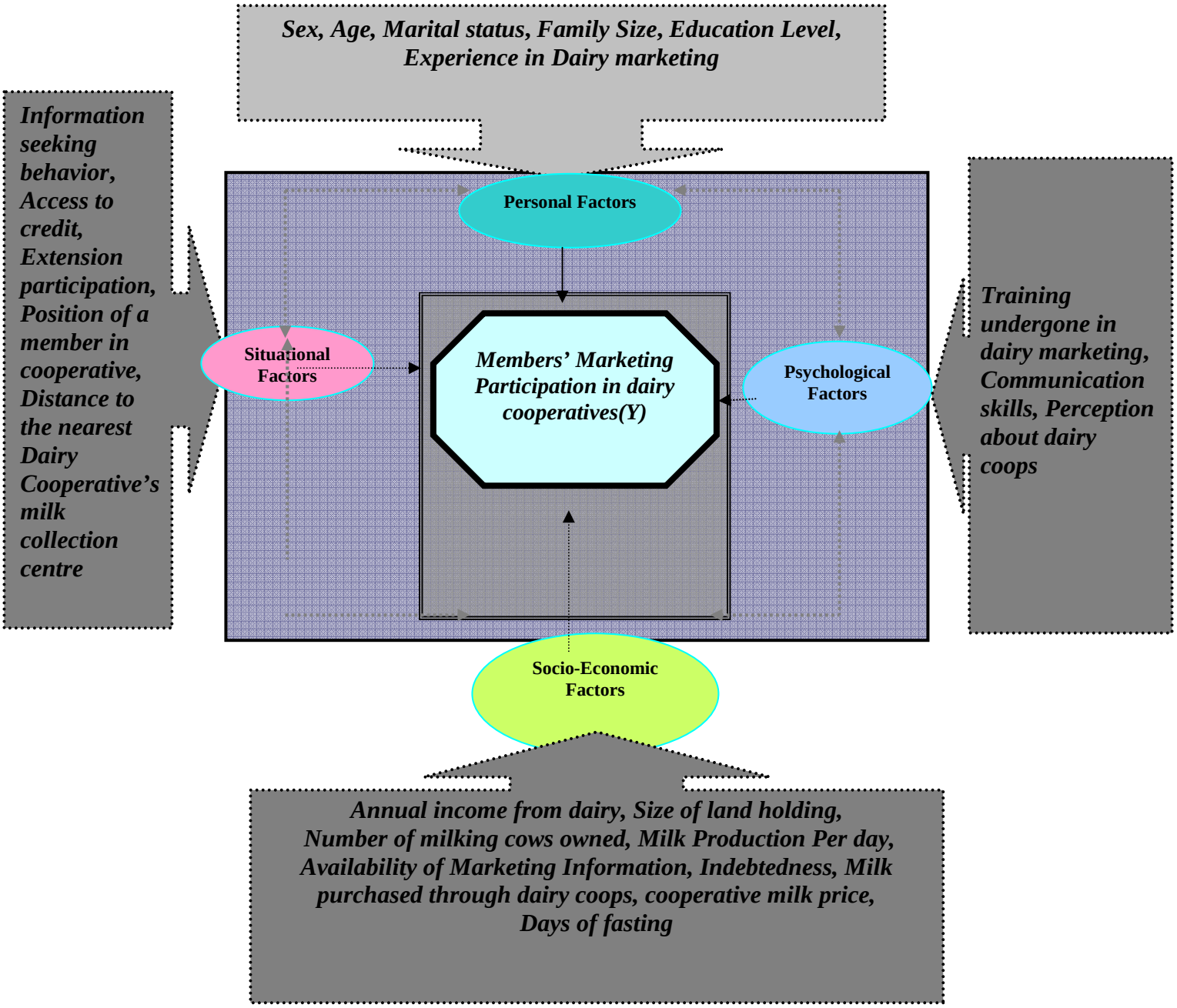


Figure1. Conceptual framework of the study

Chapter III: Materials and Methods

This chapter starts by furnishing the brief description on Arsi Zone and one of its districts namely, *Tiyo*. The chapter provides the methodology adopted on such matters as sample size determination, sampling techniques followed, type of data collected and sources accessed, data collection methods and method of data analysis. Last but not the least, variables selected for this particular study were operationally defined and the measuring tools have been explained.

3.1 Site Selection and Description

3.1.1. Description of the study area

The Regional State of Oromia lies in the central part of the Federal Democratic Republic of Ethiopia, with larger protrusions towards the south and west directions. Astronomically, Oromia extends from $3^0$24'20" North to $10^0$23'26" North latitudes (extending for about 7^o north to south and $34^0$07'37" East to $42^0$58'51" East longitudes (extending for about 9^o west to east), located in tropical zone. It covers an area of 363,136km^2 (about 34.3% of the total area of the country). In 2006, Oromia region had about 48 million population. This makes it the most populous Region in Ethiopia. In the year understudy, about 30.7%, 23.7% and 18.7% of the total area of Oromia were arable (about 69% of the total arable land was under cultivation), pasture and forest (including thick forest (7%), woodland, riverine, bushes and shrubs, and man made forests) lands respectively, while the rest was accounted for degraded, built-up and other areas (BoFED, 2007).

Socio-economic Profile of Arsi Zone

Arsi is one of the 17 zones of the Oromia Region in Ethiopia. Arsi is bordered on the south by Bale, on the southwest by the Southern Nations, Nationalities, and People's Region and West Arsi Zone, on the northwest by East Shewa, on the north by the Afar Region and on the east by West Hararghe. The highest point in Arsi is Mount Chilalo; other notable mountains in this zone include Mount Kaka and Mount Gugu. The administrative center of this zone is in *Asella* (BoFED, 2007). Barley, wheat, pulses, and other cereals including coffee have been a major cash crop in Arsi. The Central Statistical Agency (CSA) reported that 2198 tons of coffee was produced in this zone in the year ending in 2005. This represents 1.9% of the Region's output and 0.97% of Ethiopia's total output. Based on figures from the CSA in 2005, Arsi zone has an estimated total population of 3,135,686, of whom 1,557,984 were males and 1,577,702 were

females; 386,707 or 12.3% of its population are urban dwellers. With an estimated area of 23,724.44 square kilometers, Arsi has an estimated population density of 132.17 people per square kilometer (BoFED, 2007). There are 540 cooperatives in the Arsi Zone (Table 2).

Table 2.List of Cooperatives in Arsi Zone by type, up to June 2009.

	Types of cooperatives	Woredas in which the coops. exist	No .of Coops	Membership size		
				Male	Female	Total
1	Multipurpose	24	181	139967	18953	158920
2	Rural SACCOs	21	119	1890	7351	9241
3	Urban SACCOs	23	60	7482	2629	10111
4	***Dairy***	***9***	***24***	***873***	***157***	***1030***
5	Mineral	12	70	2215	208	2423
6	Fattening	3	3	105	15	120
7	Irrigation	12	31	2126	366	2492
8	Sugar coops	1	4	682	275	957
9	Fishery	2	3	276	1	277
10	Coffee	2	11	715	42	757
11	Consumers Coops	10	18	703	329	1032
12	Seed Multiplication	4	6	254	19	273
13	Honey Coops	2	2	60	1	61
14	*'Chatt'(Chata edulis)*	1	1	16	-	16
15	*Hides and Skin*	1	1	14	1	15
16	Handicraft	3	3	25	22	47
17	Fruit and Vegetables	3	3	34	127	161
	Total		540	157437	30496	187933

Source: AZCPO (2009)

3.1.2 Description of Tiyo woreda

Tiyo Woreda has the area coverage of 576 km2 which is found in the north western Part of Arsi zone bordering *Digalu Tijo* district in the south east, *Hetosa* in the north and North West, *Ziway Dugda* in the west and south west and *Munesa* district in the west. Assela is the district and zonal capital. The district is characterized by plains, valleys, hills and mountains. *Chilalo* (3815m) is the highest peak in the district. *Wurch, Dega, Weina Dega* and *Kolla (weather conditions)* covered 20.1%, 31.7%, 42.5% and 5.7% of the district respectively. The major rivers of the district are *kater, Kulumsa, Gonde, Dosha and Walkesa* (BoFED, 2007). In 1997, the total Population of Tiyo district was 128,297. The urban population was 57,986, which was 45.2% of the total population of the district. About 53.7% of the urban population and 49.8% of the rural population were females. The economically active population (15-64 years) constituted 55.4% of the total population in the district. The crude population density of the district was estimated at 223 persons per km2 (CSA, 2005) (BoFED, 2007).

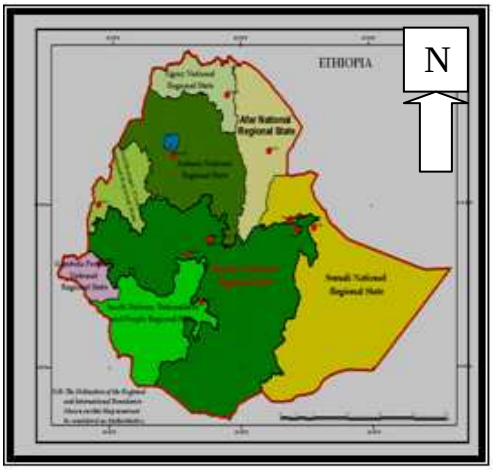
There are 15 Farmers' Associations with 13704 member farmers in Tiyo district. About 14% of the members were females (AZCPB, 2009). The cultivable land accounted for 40% of the total area of the district. Grazing land was 23.1%. About 8.7% was forest, shrub and woodland (CSA, 2005). Cereals accounted for 80.1% of the land covered by crops. Wheat, barley and '*teff*' are the most important crops. Farmers in this district were the first to use agricultural inputs in Arsi due to the presence of CADU in the area some 25 years ago. About 5.9% of the farmers had no farm plots. The district had *98,966 cattle*, 33,817 sheep, 16,121 goats, 6,913 horses, 1,358 mules, 8,109 donkeys and 24,439 poultry. Some of the livestock diseases in the district are anthrax, blackleg, pasteuelosis and African horse sickness (BoFED, 2007). Scarcity of farmland, soil erosion, and deforestation, insufficient supply of agricultural inputs and shortage of health institutions are some of the problems in the district. However, the district has potentially irrigable land of about 1,367 hectares, of which only 162 hectares have been irrigated so far.

Table 3.List of Primary Cooperatives in Tiyo Woreda by type, up to June 2009.

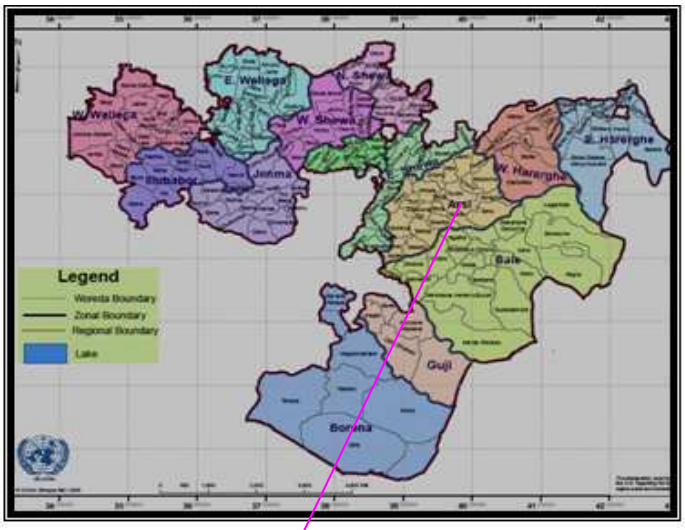
	Type of Cooperative s	No. of cooperatives	Membership size		
			Male	Female	Total
1	Multipurpose	10	8,103	1548	9,651
2	Rural SACCOs	4	96	83	179
3	Urban SACCOs	15	2638	1229	3867
4	***Dairy***	***8***	***289***	***83***	***372***
5	Mineral	11	242	30	272
6	Irrigation	3	164	10	174
7	Consumers Coops	4	263	79	
8	Handicraft	1	15	-	15
9	Fruit and Vegetables	1	3	127	130
	Total	57	11,813	3189	15,002

Source: TWCPO (2009)

Map of Ethiopia



Map of Oromia region



Tiyo Woreda

Figure 2.Map of the study area

Source: Accessed from http://*www. unocha.org/* on August 8, 2009

3.2 Data Collection Procedures

3.2.1 Sampling design

3.2.1.1 Sampling techniques

This study employed survey method with field orientation. In essence, precision of facts is better from a census. However, due to financial and time constraints, total coverage of the entire population is not practical and also not necessary. Sampling allows the researcher to study a relatively small number of units representing the whole population (Sarantakos, 1998). For this study, *probability sampling technique* was used.

3.2.1.2 Sampling method

One of the potential dairy producer's Zone in Oromia regional state is Arsi, where the first dairy development project was launched and preceded by North Shoa. So Arsi zone is purposively selected for the study. In the Arsi zone, there are 24 dairy cooperatives in 9 Woredas. In this study, three stage random *sampling* method was adopted for the selection of the respondents. In the first stage, from 9 woredas, 1 woreda was selected at random (*Tiyo*). There are 8 dairy cooperatives in the selected woreda. In the second stage, from the 8 dairy cooperatives, four dairy cooperatives were selected at random for the study. In the third stage, using random sampling procedure and probability proportionate to size of the population (PPS), 151 members of dairy cooperatives were selected as respondents for the study. In addition, there were 40 officials in the four dairy cooperatives. From each of the four dairy cooperatives, randomly *80%* of officials were included as respondents for Focus Group Discussion; i.e. 32 (80% of 40) officials and 24 key informants (4 village leaders, 15 reputed elders, and 5 marketing experts from both woreda and Zonal Cooperative promotion offices) were also considered as respondents (participants) of FGD.

3.2.3.2 Sample size

In this study, to determine sample size, different factors were taken into consideration including research cost, time, human resource, accessibility, and availability of transport facilities. The respondents for the study were selected using *probability proportionate to size of the population*

(PPS). A total Sample size of 207 individuals (151dairy cooperatives member respondents and 56 individual participants of Focus Group Discussion (FGD)) was included in the study (Table 4).

Table 4.Sample size of the study.

S. No	*sampled cooperatives*	*Membership size (population)*			*Sample size of the study**	*Participants of FGD*	
		Male	Female	Total	Individual Members	Officials*	Others
1	*Waji Bilalo*	84	5	89	63	8	*4 village leaders, 15 reputed elders, and 5 marketing experts from zonal and woreda promotion offices.*
2	*Dosha*	42	6	48	35	8	
3	*Conde*	41	11	52	37	8	
4	*Gora Fana*	22	-	22	16	8	
Total	**4**	**189**	**22**	**211**	**151**	**32**	
					151	***32***	**24**
				Grand Total		***207***	

*Source: TWCPO: * From Secondary data, 2009*

3.3. Method of Data Collection

The study used both primary and secondary data to gather the required data for achieving the stipulated objectives. The method of data collection was interview method which has used *interview schedule and personal observation* as a tool for collecting data from members. The study used *structured interview schedule* to collect information from member- respondents. In addition, Focus Group Discussion (FGD) was conducted with 32 cooperative officials (by dividing them into three smaller groups consisting 8-11group members in each smaller group) and key communicators involving 24 participants (4 Village leaders, 15 reputed elders, and 5 marketing experts of the woreda and zonal promotion offices) for getting in-depth information about their situations and issues with respect to dairy marketing participation. Focus group discussions (FGD) of key communicators was conducted with 2 groups (24 persons in total) consisting 12 persons in each group (who have intimate knowledge about the topic under consideration) as per the check list developed for this purpose. The Interview Schedule prepared

in English was translated to *Afaan Oromo* before final administration. The translated interview schedule was pre-tested with 25 respondents who were members of Dairy Cooperatives and who were from other than sample selected and suitable modifications were made. Based on the nature and extent of responses obtained during the pre-test, necessary modifications and further editing had been done in the interview schedule to ensure its clarity and completeness for generating the needed information from the respondents.

3.3.1 Primary data

The study was undertaken through qualitative and quantitative research methodologies. In order to collect the primary data, the researcher used the *pre-tested interview schedule, personal* observation, and *focus group discussion* with properly reviewed checklist. Both qualitative and quantitative information on members' participation of dairy cooperatives were gathered as first hand information. The specific aspects on which data collections focused include: the factors affecting the level participation of the respondents, and identification of existing constraints in effective participation of respondents in dairy marketing.

3.3.2 Secondary Data

So as to back up the first hand information with already existing evidence, the researcher had collected data that are relevant to the study from the following concerned bodies; Annual reports of dairy cooperatives, documents, guidelines from cooperative promotion offices starting from federal level to district offices. Moreover, Published and unpublished reports and research publications from government and non-governmental bureaus were accessed. The data collected from these sources include: the number of cooperatives by type, membership by sex and age; marketing outlet; marketing activities undergone, dairy product marketing volume; input and output data, data relating to nature and type of participation , components of participation, and other relevant data related to the objectives of the study.

3.4 Method of Data Analysis

The researcher has used different statistical procedures and methods to analyze the data. In this study descriptive statistical tools were used to analyze the quantitative data. The important statistical measures that were adopted were *means, percentage, frequencies, and standard deviations.* The data was partially analyzed at the point during collecting the data in order to avoid disregard and be able to fill the gap in quantitative data then there. For this study, *Karl Pearson's Coefficient of Correlation*(r) was applied to analyze the data. The degree of association

or correlation between the variables will be answered by the use of correlation analysis (Gomez and Gomez, 1984; Kothari, 2003). The existence of a significantly high correlation between two variables tells us nothing about why the correlation exists. In particular, the correlation does not tell us that one variable is the cause and the other is the effect (Browen and Starr, 1983).

On the other side, the Ordinal Logistic Regression Model was another statistical technique used to analyze the influence among variables (influence of explanatory variables on the dependent variable). Moreover, preference indices and measurement scales were also employed in the realizing objectives of the study. The field data was coded and entered into SPSS version 12 and JMP 5 statistical packages for further analysis and estimation after collection and checking the responses.

3.4.1 Analysis of Factors Affecting Marketing Participation of Members in Dairy Cooperatives

In order to analyze the major socio-economic, situational, personal, and psychological factors that affect the marketing participation of members in their dairy cooperatives, Pearson Correlation analysis(r) and Multi-nomial Logistic Regression Model were used.

3.5. Specification of Econometric Models

3.5.1. Multi-nomial Logistic Regression Model

In the bivariate logit or profit models, the modeling process used is yes or no response binary variables. But often the response variable or regress can have more than two outcomes (levels) and very often these outcomes are ordinal in nature; that is, they cannot be expressed on an interval scale. To study such phenomena, one can expand the bivariate logit and probit models to take into account multiple ranked categories (Gujarati, 2003).

Gujarati (2003) recommends using multistage/multinomial normal and logistic probability distributions so as to allow for the analysis of various ranked categories.

One of the specific objectives of this research was to analyze the relationship between the overall members' marketing participation level in primary dairy cooperatives, the categorical dependent/ response variable with three levels (never *(1), sometimes (2), regularly (3)*) and various personal, psychological, situational and socio-economic independent variables.

As the dependent variable i.e., *members' marketing participation in dairy cooperatives* is a discrete/ categorical variable with three levels (*never, sometimes*, and *regularly*) and explanatory variables are both continuous and categorical (dummy), the right/suitable modeling specification would be a multi-nomial logistic regression model. This model is more appropriate when the dependent variable has more than two outcomes and the outcomes can be ranked orderly (Gujarati, 2003).

When *Y* is ordinal, a modified version of logistic regression is used for fitting. The cumulative probability of being at or below each response level is modeled by a curve. The curves are the same for each level except that they are shifted to the right or left.

The ordinal logistic model fits a different intercept, but the same slope, for each of *r* - 1 cumulative logistic comparisons, where *r* is the number of response levels. Each parameter estimate can be examined and tested individually, although this is seldom of much interest.

The ordinal model is preferred to the nominal model when it is appropriate because it has fewer parameters to estimate. In fact, it is practical to fit ordinal responses with hundreds of response levels.

Logistic regression fits nominal/ordinal Y responses to a linear model of X terms. To be more precise, it fits probabilities for the response levels using a logistic function. For two response levels the function is

$$\textbf{Prob(Y= 1}^{\textbf{st}}\textbf{ response)} = \textbf{(1+ e}^{\textbf{Xb -1}}\textbf{)}$$

or equivalently

$$\log\left(\frac{\text{Prob}(Y = \text{1st response})}{\text{Prob}(Y = \text{2nd response})}\right) = \mathbf{X}b$$

For r nominal/ordinal responses, where r >2, it fits r – 1 sets of linear model parameters of the form

$$\log\left(\frac{\text{Prob}(Y = j)}{\text{Prob}(Y = r)}\right) = \mathbf{X}_j b$$

Where, $\mathbf{X_j}$ - j^{th} explanatory variable

Y - Response variable (Members' marketing participation in dairy cooperatives)

j - 1, 2, …, 23 (There are 23 explanatory variables in this study).

b –slope or coefficient of explanatory variables

***r* –** Number of response variable levels (In this particular study, the response variable is marketing participation of members in their dairy cooperatives having 3 ordinal levels: *'never' (1), 'some times' (2),* and *'regularly' (3)*).

The fitting principal of maximum likelihood means that the βs (slopes or coefficients of explanatory variables) are chosen to maximize the joint probability attributed by the model to the responses that did occur. This fitting principal is equivalent to minimizing the negative log-likelihood (–Log Likelihood) (Gujarati, 2003).

$$\text{Loss} = -\text{loglikelihood} = -\log\left(\text{Prob}\left(\sum_{i=1}^{n} i\text{th row has the } y_j\text{th response}\right)\right)$$

as attributed by the model. In other words, the fitting principle for a logistic regression minimizes the sum of the negative logarithms of the probabilities fitted to the response events that occur– that is, maximum likelihood. The ordinal model is preferred to the nominal model when it is appropriate because it has fewer parameters to estimate. In fact, it is practical to fit ordinal responses with hundreds of response levels.

If the response variable has an ordinal modeling type, the platform fits the cumulative response probabilities to the logistic distribution function of a linear model using maximum likelihood. Likelihood-ratio test statistics are provided for the whole model and lack of fit. Wald test statistics are provided for each effect (Gujarati, 2003).

4.6 Statistical Tests of Multicollinearity Problem

Prior to estimating the models, it is essential to verify if multicollinearity exists among the explanatory variables. If multicollinearity turns out to be significant, the simultaneous presence of the two variables will underpin the individual effects of these variables. Gujarati (1995)

reported that there are various indicators of multicollinearity and no single diagnostic will give us a complete handle over the co-linearity problem. For this particular study, Variance Inflation Factor (VIF) will be used for continuous variables. The larger the value of VIF, the more it is troublesome. As a rule of thumb, if the VIF of a variable exceeds 10 (this will happen if R_i^2 exceeds 0.95), that variable is said to be highly collinear (Gujarati, 1995). Gujarati (1995) stated the VIF is given as:

$$VIF\ (Xj) = \frac{1}{1 - R^2_j}$$

Where, R_j^2 is the coefficient of determination when the variable X_j is regressed on the other explanatory variables. Similarly, there may be also interaction between qualitative (dummy) variables, which can lead to the problem of multicollinearity (the degree of association between dummy variables). To detect this problem, coefficients of contingency will be compounded. According to Healy (1984), the dummy variables are said to be collinear if the value of contingency coefficient is greater than 0.75.

The contingency coefficient will be compounded as follows:

$$C = \sqrt{\frac{\chi^2}{n + \chi^2}}$$

Where, C is coefficient of contingency, $\chi 2$ is chi-square test, and n = total sample size. Generally, different tests like F-value and chi-square will also be employed to testify the significance of results obtained from the models specified with the help of SPSS and JMP 5 computer software programs.

Table 5.List of dependent and independent variables

Dependent Variable(Y)	**Explanatory Variables(X_1-X_{23})**
Members' marketing Participation in dairy Cooperatives	1. **Sex** 2. **Age** 3. **Education Level** 4. **Family Size** 5. **Experience in dairy marketing** 6. **Marital status** 7. **Training undergone in dairy marketing** 8. **Information seeking behavior** 9. **Access to credit** 10. **Extension participation** 11. **Position of the member in the cooperative** 12. **Annual income from dairy** 13. **Size of land holding** 14. **Number of milking cows owned** 15. **Milk Production per day** 16. **Availability of marketing information** 17. **Indebtedness** 18. **Communication skills** 19. **Milk Purchased through the dairy cooperatives** 20. **Perception about dairy cooperatives** 21. **Distance to the nearest Dairy Cooperative's milk collection centre** 22.**Cooperative Price for Milk** 23.**Days of fasting**

3.7 Operationalization of Variables and Measurement

Subsequent to designing the method of analyzing the data, selection of variables and operationalization in this particular study as well as their measurement is vital. This section illustrates the operational definitions of variables and their measurements.

3.7.1 Dependent variable

The dependent variable for this study is:

Members' Marketing Participation (MM-PART):

Members' marketing participation in dairy cooperatives is measured in terms of the frequency of transactions members made with their dairy cooperatives. For this particular study, members' frequency of transactions (marketing participation) with dairy cooperatives is expressed as '*always'*, '*sometimes'*, and '*never'*.

For this particular study, there are two components of members' marketing participation in dairy cooperatives. These are *decision making with respect to dairy marketing through cooperatives* and *involving in the dairy marketing functions of the dairy cooperatives*. The frequency of transactions of both components of marketing participation is expressed as *'regularly' (3), 'sometimes' (2), and 'never' (1)* ordinal measuring scales.

3.7.2 Independent variables

The following explanatory variables were hypothesized to influence the dependent (response) variable (marketing participation of members in dairy cooperatives) in the study unit.

1. Sex (SEX): It is it is operationaliszed as the biologically determined trait of respondents. It is dummy variable representing male (0) and female (1).

2. Age (AGE): It is operationalized as the number of completed years of a respondent at the time of conducting the interview. Age can generate or erode confidence on technologies. In other words, with age a member can become more risk averse to new technologies. It is hypothesized that young members have more probability of being participate in dairy marketing. It is a *continuous variable* and measured using completed years of life.

3. Marital status (MAR_STA): It indicates whether respondents are married, unmarried, single, or widowed. Since married respondents will have more roles to be performed, a positive relationship was anticipated between marital status and market participation of the respondent in dairy marketing.

4. Family Size (FM_SZ): Refers to the number of household members of the respondents. It is hypothesized that the larger the family size, the better would be the marketing participation of the households as there is adequate labor force for them.

5. Educational level (EDU_LEV): It is the maximum qualification possessed by the members at the time of investigation. The higher the education level, the better would be the participation of the farmer in the dairy cooperative as a result of his/her knowledge about the benefits of the dairy cooperative easily. Level of education was assumed to increase members' ability to obtain, process, and use information related marketing dairy product to their cooperatives. Education is therefore expected to increase the probability of member's participation. This variable is measured based upon formal years of schooling attended by the respondents. A schedule is developed for the respondents in the study as follows;

S.N	Level of education	Score
1	**≥ grade 4**	**1**
2	**5^{th} grade – 8^{th} grade**	**2**
3	**9^{th} grade – 12^{th} grade**	**3**
4	**Diploma**	**4**
5	**Degree**	**5**

6. Experience in Dairy Marketing (EXP_DM): It is operationalized as the number of years since a respondent members have joined in the dairy cooperatives and started marketing dairy products to their cooperatives. Experience of the farmer-member is likely to have a range of influences on adoption. Experience will improve members' active participation in dairy product marketing through cooperatives. More experienced grower may have a lower level of uncertainty about the technology's performance. Farmers with higher experience appear to have often full information and better knowledge to evaluate the advantage of pursuing dairy marketing to their cooperatives. Hence it is hypothesized to affect market participation positively.

7. Communication skills (COM_SKL): It is operationalized as the ability to express ideas effectively in written or spoken form, and the ability to listen attentively. This explanatory variable would be measured using list of items selected through systematic procedure. Communication skill is anticipated to have positive relationship with market participation of the respondents on dairy marketing in their cooperatives.

8. Annual Income from Dairy (AN_INC): It is operationally defined as income obtained from marketing of dairy product that is expressed in Birr per year. The income level is anticipated to have a positive relationship with the dependent variable since normally it becomes a facilitating factor.

9. Number of milking Cows owned (NO_MCWS): It is operationalized as number of milking cows possessed by the member. It is assumed that the larger the number of cows, the member has more room to participate in dairy marketing. Therefore, it is hypothesized that number of cows has a positive relationship with the dependant variable.

10. Milk Production per day (PRO_DY): It is operationalized as the amount of milk produced per day (in liters) by the cows of the respondents. It is assumed that the more production of milk per day, the more market participation of members in dairy marketing.

11. Milk Purchased through Cooperatives (MPO_COOP): It is operationalized as the maximum quantity of milk that a given cooperative can accommodate through purchase from members and potential sellers. It is measured through liter of milk per day. It is expected that this explanatory variable would have positive relationship with the dependant variable.

12. Training undergone in dairy marketing (TRG_DMKT): It is operationalized as the number of trainings undergone by the respondents on any aspect of dairy marketing. Training is one of the means by which members acquire new knowledge and skill and it is measured in terms of the number of times the member has participated prior to the time of investigation. Hence, training undergone is expected to positively influence members' participation in dairy marketing.

13. Information seeking behavior (INFO_BHV): It is operationalized as the extent to which the respondents are seeking information regarding any aspect of dairy marketing from different communication sources. It was operationally defined as the degree to which the respondent is eager to get information from various sources on different roles he/she performs. This is measured in terms of how much information is sought, how frequently and from where the information is sought. Information seeking behavior is assumed to have positive relationship with the dependent variable.

14. Perception about dairy cooperatives (PRCP_COOP): It is the degree of positive or negative perception of members towards cooperatives. This variable was measured by using a measuring scale developed for this purpose.

15. Access to credit (AX_CRD): Access to credit can relax the financial constraints of members. It indicates whether respondents have access to credit or not. Therefore, access to credit may have impact on level of market participation in dairy marketing. Therefore, the variable was assumed to have a positive relationship with the dependant variable.

16. Extension participation (EXT_PART): It is operationally defined as members' frequency of contact with development agents and frequency of participation in extension planning, training, farmers' field day, on-farm trial and demonstration regarding to livestock production in general and dairy farming practices in particular. It was measured using an measuring index developed for this purpose. It was assumed that this variable will have a positive relationship with the participation of the members in dairy marketing.

17. Availability of Marketing Information (AVA_MINFO): refers to the timely and required information with respect to dairy marketing that is available to the respondents.

18. Indebtedness (INDEBT): refers to the amount of money due to other persons and institution, which the member has borrowed and bound to repay. It is the total loan in terms of money, a member owes, at the time of investigation to various money lending sources. A schedule was developed to measure indebtedness.

19. Position of the member in the cooperative (PO-COOP): It is a dummy variable taking a value 2 if the member has a position (as dairy cooperative official or office bearer) in the cooperative, and 1 if he/she is ordinary member. Having a position in the cooperative increases the attachment of the farmer to the cooperative than the ordinary member and help to realize the benefits of the cooperative. Thus, their market participation in the dairy cooperative is better than the ordinary member. Therefore, having a position in the cooperative is expected to influence the market participation of members in dairy cooperatives positively.

20. Size of Land holding (SZ_LHO): It refers to the cultivable area in hectares possessed by the members/respondents. Different researchers have tried to measure farm size in different ways. In this study farm size was measured in hectares.

21. Cooperative Price for Milk; (COOPPM): This is a dummy variable taking a value 1 if the cooperative price for the farmer's milk is similar or better than other marketing agents in the area and, 0 otherwise. Price is one of the effects that the cooperatives pass on their members' economy (Chukwu, 1990). Therefore, if the cooperative charge competitive price for their milk,

the member farmers market it through their cooperatives (Wilkins and Stafford, 1982; Fulton and Adamowicz, 1993; Misra et al., 1993; Klein et al., 1997). Therefore, cooperative price is likely to influence the marketing of milk through the cooperative positively.

22. Distance to the nearest dairy cooperative's milk collection centre (DISMARK): It is operationally defined as the time required (measured in hours) to reach the nearest market (Dairy Cooperative's milk collection) center. The variable is crucial in making decision to make transaction with cooperative. The less amount of time required, as compared to other alternative milk markets (other than the dairy cooperative service center (market)), other factors remaining constant (price, quality…), the high probability of being utilizing cooperative services. Therefore, this variable is hypothesized to affect the levels of members' participation in cooperatives negatively.

23. Days of fasting (D_F):

It is operationally defined as the total number of days per year a person is fasting in connection with religious faith. The more number of days a person is fasting, whether he is Christian or Muslim, is hypothesized to have a negative effect on marketing participation; whereas sales volume of milk during the fasting period may be positively influenced.

Chapter IV: Results and Discussions

The overall results of Focus Group Discussion (FGD), cross sectional survey and personal observation are presented and discussed in this chapter. Based on the objectives of this thesis, descriptive and econometrics analysis, preference indices and scales have been used to explain the results of personal, situational, psychological, and socio-economic variables of the respondents. The descriptive analysis such as mean, percentage, and standard deviation were done to describe the general characteristics of members of dairy cooperatives. Similarly, the econometric analysis using multinomial logistic regression model or logit model was done to identify determinants of members' marketing participation in dairy cooperatives.

4.1 Personal Characteristics of the respondents

4.1.1 Sex distribution of sample respondents

The conducted survey revealed that 134 (88.7%) of the sample respondents were male and 17 respondents (11.3%) were female. As indicated above, the number of female respondents is very low as compared to that of the female due to the fact that the participation of women in different social affairs and their access to and control over resources is low in the study area as result of socio-cultural factors about women deep-rooted in the society for long period of time. Though the membership size of women in the surveyed cooperatives was low as compared to male, most of the routine dairy activities are carried out by them.

Table7. Cross tabulation result for Sex and Marketing Participation in dairy cooperatives

		SEX		Total	%
		male	female		
Marketing	Never	1	0	1	.67
Participation in dairy cooperatives	Sometimes	55	6	61	40.39
	regularly	78	11	89	58.94
	Total	134	17	151	100

Source: Survey data, 2010

4.1.2 Age distribution of sample respondents

The average age of the respondents was 39.07 years and the minimum and maximum age observed were 26 years and 62 years respectively. Pearson chi-square is equal to 0.732 which is greater than alpha (0.05) indicates that there is no significant relationship between marketing participation of members in dairy Cooperatives and age of members (Figure 4).

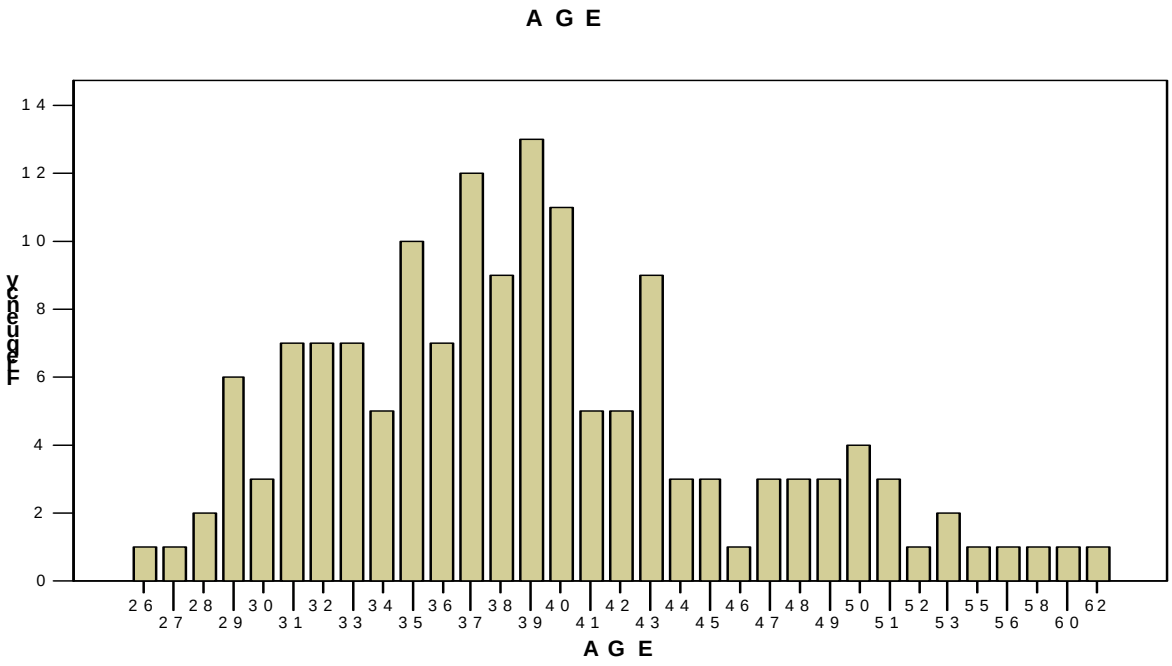


Figure 3.Age distribution of sample respondents.

Source: Computed Survey data, 2010.

4.1.3 Distribution of sample respondents by marital status

Almost all of the respondents (98.7%) were married and the rest 1.3% of them were observed to be widowed. The Pearson chi-square test result revealed that there is no significant relationship between Marketing Participation and marital status of the sample respondents of the dairy cooperatives (Table 8).

Table 8.Cross tabulation result for marital status and Marketing Participation of members in dairy cooperatives.

		Marketing Participation in dairy cooperatives			Total
		Never	Sometimes	regularly	
marital status	married	1	60	88	149(98.7%)
	widowed	0	1	1	2(1.3%)
Total		1	61	89	151(100%)

Source: Descriptive statistics of primary data (2010)

4.1.4 Distribution of sample respondents by Educational level

It was seen that 37.7% of the respondents have attained the educational level of grade 9-12 and only 6% of the sampled members had attained an educational status of diploma level. The Pearson chi-square test revealed that there is no significant relationship between marketing participation and educational level of the sample respondents of the dairy cooperatives as Pearson chi-square value is 0.633 which is greater than p-value (0.05) (Table 9).

Similarly, the correlation analysis of members' educational level and marketing participation in dairy cooperatives clearly showed that there was no association or correlation among them as Pearson correlation value is -0.092.

Table 9.Cross tabulation result for educational level and Marketing Participation of members in dairy cooperatives.

		Marketing Participation in dairy cooperatives			Total	%
		Never(1)	Sometimes(2)	Regularly(3)	count	
educational level	grade 0- 4	0	13	27	40	26.5
	grade 5-8	0	21	24	45	29.8
	grade 9-12	1	22	34	57	37.7
	diploma	0	5	4	9	6
Total		1	61	89	151	100

Source: Descriptive statistics of primary data, 2010.

4.1.5 Total number of household size (Family size)

The total number of household size or family size of the sampled respondents was 663. Each respondent had 4.39 family sizes on average. The minimum and maximum numbers of the family size of the respondents were 2 and 8 respectively. Further more, the correlation analysis of the two variables(family size and marketing participation in dairy cooperatives) revealed that there was no correlation between them as Pearson p-value is 0.084 which is greater than 0.05(95% level of significance) (Table 10).

Table 10.Descriptive statistics of total family size of the respondents.

N	Valid	151
	Missing	0
Mean		4.39
Std. Error of Mean		.122
Median		4.00
Mode		3
Std. Deviation		1.497
Variance		2.240
Skewness		.480
Std. Error of Skewness		.197
Kurtosis		-.505
Std. Error of Kurtosis		.392
Range		6
Minimum		2
Maximum		8
Sum		663
Percentiles	25	3.00
	50	4.00
	75	5.00

Source: Descriptive statistics of primary data, 2010.

4.1.6 Experience in dairy marketing through cooperatives

Most of the respondents (52.32%) had above four years of experience in dairy marketing through cooperatives and only 1.33% of the respondents had Up to one year experience in dairy marketing through cooperatives. In addition to this, the correlation result of the two variables revealed that there is no correlation between experience in dairy marketing and marketing

participation of members in dairy cooperatives as Pearson p-value was 0.090 which is greater than 0.05 (Table 11).

Table11. Cross tabulation result for Experience in dairy marketing through cooperatives and marketing participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			
			Never	Sometimes	regularly	Total
Experience in dairy marketing through cooperatives	Up to one year	Count	0	2	0	2
		% of Total	.0%	1.3%	.0%	1.3%
	From one year to three years	Count	0	5	6	11
		% of Total	.0%	3.3%	4.0%	7.3%
	From three years to four years	Count	1	23	35	59
		% of Total	.7%	15.2%	23.2%	39.1%
	Above four years	Count	0	31	48	79
		% of Total	.0%	20.5%	31.8%	52.3%
Total		Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010

4.2 Socio-Economic characteristics

4.2.1 Size of land holding of the respondents

The average Size of land holding of the respondents was 1.10 hectares. The maximum and minimum Size of land holding of the respondents was 5.00 hectares and 0.00 hectare respectively.

Table 12.Descriptive Statistics for the Size of land holding of the respondents.

N	Valid	151
	Missing	0
Mean		1.1037
Std. Error of Mean		.08513
Std. Deviation		1.04615
Minimum		0.00
Maximum		5.00

Source: Computed Survey data, 2010

4.2.2 Number of milking Cows owned

The majority of the respondents (79.5%) owned one milking dairy cow each. 19.2% and 1.3% of the respondents had two and three milking cows each respectively.

Table13.Distribution of milking Cows owned by respondents.

Number of milking Cows		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	120	79.5	79.5	79.5
	2	29	19.2	19.2	19.2
	3	2	1.3	1.3	1.3
	Total	151	100.0	100.0	100.0

Source: Computed Survey data, 2010.

4.2.3 Annual income from dairy activities

Most of the sampled members (45.0%) have received from 1000 Br to 2000 Br annually from dairy activities. 2.0% and 28.5% of the sampled respondents have received up to 1000 Br and from 2000 Br to 3000 Br annually. 15.9% of the sampled respondents have received above 4000Br and 8.6% up to 3000 Br and from 4000 Br annually.

Table14. Cross tabulation for annual income from dairy activities and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			Total
			Never	Sometimes	regularly	
annual income from dairy activities	Up to 1000 Br	Count	0	1	2	3
		% of Total	.0%	.7%	1.3%	2.0%
	From 1000 Br to 2000 Br	Count	0	33	35	68
		% of Total	.0%	21.9%	23.2%	45.0%
	From 2000 birr to 3000 Br	Count	0	18	25	43
		% of Total	.0%	11.9%	16.6%	28.5%
	From 3000 Br to 4000 Br	Count	0	6	7	13
		% of Total	.0%	4.0%	4.6%	8.6%
	Above 4000 Br	Count	1	3	20	24
		% of Total	.7%	2.0%	13.2%	15.9%
Total		Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010.

4.2.4 Milk Production per day

The average milk production per day of the members of dairy cooperatives was 7.62 litres. The minimum and maximum milk produced per day was 2 litres and 23 litres respectively (Table 15).

Table 15.Descriptive Statistics for Milk Production per day.

N	Valid	151
	Missing	0
Mean		7.6225
Std. Deviation		3.90895
Minimum		2.00
Maximum		23.00

Source: Computed Survey data, 2010

4.2.5 Milk purchased through cooperatives

Most of the dairy cooperative members (81.5%) replied that their dairy Cooperatives were not ready to purchase all amount of milk delivered to them. The cooperative societies were reluctant to purchase members' produce (milk) due to lack of market access. Only 18.5% of the respondents replied that their cooperatives purchased all the milk they delivered to them .This is due to low amount of their milk they delivered to their respective cooperatives usually from 1-2 litres of milk per day.

Table16. Cross tabulation result for Milk Purchased through Cooperatives and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			
			Never	Sometimes	regularly	Total
Milk Purchased through Cooperatives	all the milk is not purchased	Count	1	46	76	123
		% of Total	.7%	30.5%	50.3%	81.5%
	all the milk is purchased	Count	0	15	13	28
		% of Total	.0%	9.9%	8.6%	18.5%
Total		Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010.

4.2.6 Indebtedness

Almost all (97.4%) of the respondents had no debt during the year understudy and only 2.6% of the respondents had debt up to Br 500. It is obvious that Access to credit has positive association with indebtedness. Thus, one can generalize that as the sampled members of dairy cooperatives do not had access to credit, their probability of being indebted would be very low (When other factors that influence this variable (indebtedness) remain constant).

Table17. Cross tabulation result for Indebtedness and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			
			Never	Sometimes	regularly	Total
Indebtedness	no debt	Count	1	59	87	147
		% of Total	.7%	39.1%	57.6%	97.4%
	Debt up to Br 500	Count	0	2	2	4
		% of Total	.0%	1.3%	1.3%	2.6%
Total		Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010.

4.2.7 Availability of market information

Most of the respondents, i.e. 135 members (89.4%) replied that they had opportunities of getting market information from different sources mainly from dairy cooperative itself, personal observations, neighbors, relatives, and telephone . In contrast to this, 16 members (10.6%) had little market information.

Table18.Cross tabulation result for Availability of market information and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			
			Never	Sometimes	regularly	Total
Availability of market information	little market information	Count	0	7	9	16
		% of Total	.0%	4.6%	6.0%	10.6%
	information is available from different sources	Count	1	54	80	135
		% of Total	.7%	35.8%	53.0%	89.4%
	Total	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010.

4.2.8 Cooperative milk price

45.0% of the respondents replied that their dairy Cooperatives paid less than the then(2001 E.C) market price of members' whole milk and 55.0% of the respondents responded that their dairy cooperatives paid similar or better price(more than the then current price of milk) for the milk

delivered by their members. This price difference in milk delivered to the Cooperatives was seen due to comparative advantages that some sampled dairy societies had better market access for members' dairy products as opposed to the rest dairy societies who had no alternative market access for marketing of members' milk.

Table19.Cross tabulation result for Cooperative Price for Milk and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			
			Never	Sometimes	regularly	Total
Cooperative Price for Milk	coop. pays less price vs. market price	Count	1	28	39	68
		% of Total	.7%	18.5%	25.8%	45.0%
	similar or better milk price	Count	0	33	50	83
		% of Total	.0%	21.9%	33.1%	55.0%
	Total	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010

4.2.9 Days of fasting

The average days of fasting undertaken by respondents with regard to their spiritual faith was 106.34 days. The minimum and maximum days of fasting so far undertaken by respondents were 0 day and 181 days respectively (Figure 5).

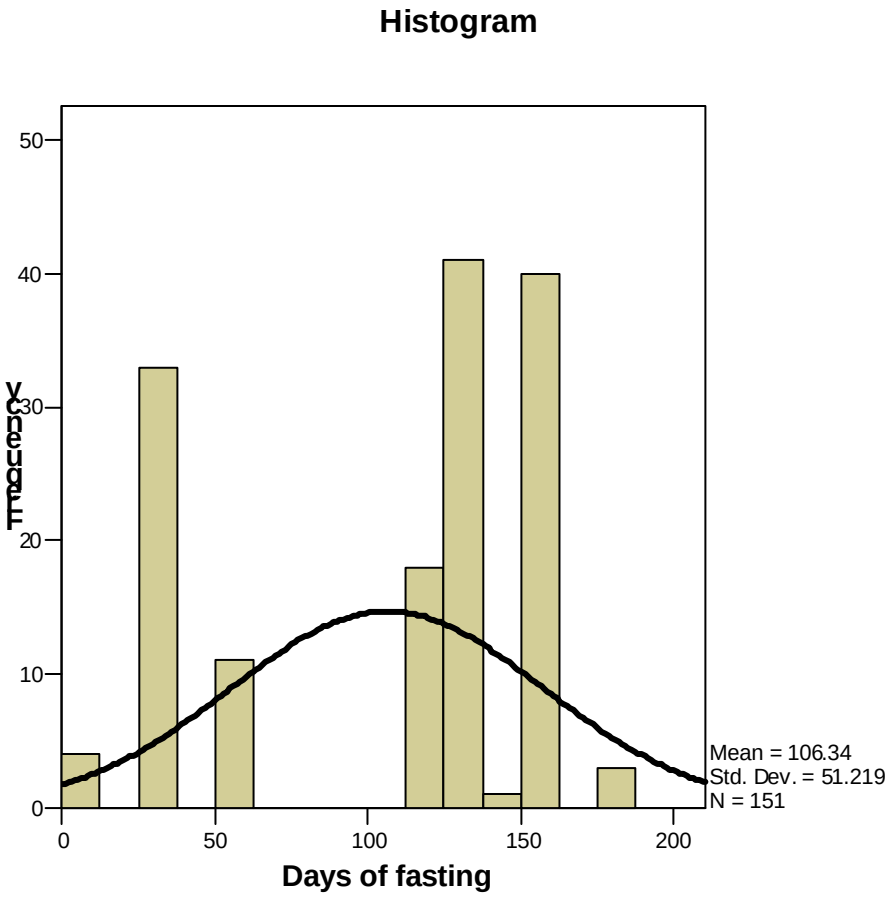


Figure 4.Distribution of respondents by days of fasting.

Source: Computed Survey data, 2010

4.3. Situational characteristics

4.3.1 Position of a member in Cooperatives

82.8% of the respondents were ordinary members of the dairy societies and the rest of them (17.2%) were on a position of cooperative officials and/or office bearers. Position of a member in Cooperative and Marketing Participation in dairy cooperatives had significant positive correlation with marketing participation of members in dairy cooperatives (Pearson correlation coefficient = 0.168) at the 0.05 level.

Table 20.Cross tabulation result for Position of a member in the cooperative and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			
			Never	Sometimes	regularly	Total
Position of a member in the cooperative	ordinary member	Count	0	57	68	125
		% of Total	.0%	37.7%	45.0%	82.8%
	cooperative official or office bearer	Count	1	4	21	26
		% of Total	.7%	2.6%	13.9%	17.2%
	Total	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010.

4.3.2 Information seeking behavior

Most of the respondents (64.9%) had sought information with respect to dairy marketing 'sometimes' while 23.2% of the respondents did so 'rarely'. Only 11.9% of them had sought information with respect to dairy marketing 'always' (Table 21).

Table 21 Cross tabulation result for Information seeking behavior and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			Total
			Never	Sometimes	regularly	
Information seeking behavior	The info. is sought rarely	Count	0	21	14	35
		% of Total	0.0%	13.9%	9.3%	23.2%
	The info. is sought sometimes	Count	1	37	60	98
		% of Total	.7%	24.5%	39.7%	64.9%
	The info. is sought always	Count	0	3	15	18
		% of Total	.0%	2.0%	9.9%	11.9%
	Total	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010.

4.3.3 Extension participation

78.8% of the respondents have participated in agricultural extension activities (livestock feeding, marketing of dairy products, and livestock management) sometimes and 17.2% of them were never participated in extension activities as a result of low members' frequency of contact with DAs(Development Agents), not invited by local DAs,low awareness and personal perception of

the members of the dairy cooperatives. Only 4.0% of them participated regularly in different extension activities with respect to dairy marketing (Table 22).

Table 22 Cross tabulation result for Extension participation and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			Total
			Never	Sometimes	regularly	
Extension participation	Never participated in extension.	Count	1	13	12	26
		% of Total	.7%	8.6%	7.9%	17.2%
	Sometimes participates in extension	Count	0	48	71	119
		% of Total	.0%	31.8%	47.0%	78.8%
	Regularly participates in extension	Count	0	0	6	6
		% of Total	.0%	.0%	4.0%	4.0%
	Total	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010.

4.3.4 Access to credit

All of the respondents replied that they had no access to credit to expand and upgrade their dairy businesses. This shows that credit was one of the bottlenecks that need immediate intervention so

as to relax the financial constraints of small holder dairy farmers.

Table 23.Cross tabulation result for Access to credit and Marketing Participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			
			Never	Sometimes	regularly	Total
Access to credit	no access to credit	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%
	Total	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Computed Survey data, 2010.

4.3.6 Distance to the nearest Dairy Cooperative's milk collection centre

The average distance spent by the respondents to reach the nearest Dairy Cooperative's milk collection centre was 0.52 hour (31.2 minutes). The minimum and maximum time spent by the respondents to reach the nearest Dairy Cooperative's milk collection centre was 0.05 and 1 hour respectively.

Table 24.Descriptive Statistics for the Distance to the nearest dairy cooperative's milk collection centre (in hours).

N	Valid	151
	Missing	0
Mean		.5201
Std. Deviation		.27360
Minimum		.05
Maximum		1.00

Source: Survey data, 2010

4.4 Psychological characteristics

4.4.1 Training undergone in dairy marketing

Most of the interviewed members of dairy cooperatives (79.5%) had not undergone any training with respect to dairy marketing at all and 17.2% of the respondents have undergone dairy marketing training once. Only 0 .7% and 2.6% have undergone dairy marketing training three times and twice respectively.

Table 25. Cross tabulation result for training undergone in dairy marketing and marketing participation in dairy cooperatives.

			Marketing Participation in dairy cooperatives			
			Never	Sometimes	regularly	Total
Training undergone in dairy marketing	no training at all	Count	1	54	65	120
		% of Total	.7%	35.8%	43.0%	79.5%
	trained once	Count	0	6	20	26
		% of Total	.0%	4.0%	13.2%	17.2%
	trained twice	Count	0	1	3	4
		% of Total	.0%	.7%	2.0%	2.6%
	trained three times	Count	0	0	1	1
		% of Total	.0%	.0%	.7%	.7%
	Total	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Survey data, 2010

4.4.2 Perception about dairy cooperatives

Sampled members were asked six questions/statements that were believed to measure the Perception/awareness of the members (interview schedule in the appendix) and the result is summarized as follows based on their responses;

70.9% of the respondents had positive Perception about dairy cooperatives while 18.5% of the respondents had negative Perception about dairy cooperatives. It was found to be difficult to categorize and report the perception's of 10.6% of the respondents as negative or positive(undecided) as they were failed to respond to the given questions positively or negatively

(Table 26).

Table 26.Cross tabulation Perception about dairy cooperatives and Marketing Participation in dairy cooperatives.

Perception about dairy cooperatives			Marketing Participation in dairy cooperatives			Total
			Never	Sometimes	regularly	
	agree(positive)	Count	0	38	69	107
		% of Total	.0%	25.2%	45.7%	70.9%
	disagree(negative)	Count	1	16	11	28
		% of Total	.7%	10.6%	7.3%	18.5%
	undecided	Count	0	7	9	16
		% of Total	.0%	4.6%	6.0%	10.6%
	Total	Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Survey data, 2010.

4.4.3 Communication skills

Sampled members were asked 12 questions/statements that were believed to measure the Communication skills of the members (interview schedule in the appendix) and the result is summarized as follows based on their responses;

76.8% of the respondents had good communication skill while 9.3% of the sampled members had very good communication skill with respect to dairy marketing. The rest 13.9% of the respondents had poor communication skill with respect to dairy marketing.

Table 27.Cross tabulation result for Communication skill and Marketing Participation in dairy cooperatives

			Marketing Participation in dairy cooperatives			Total
			Never	Sometimes	regularly	
Communication skill	poor	Count	0	14	7	21
		% of Total	.0%	9.3%	4.6%	13.9%
	good	Count	0	47	69	116
		% of Total	.0%	31.1%	45.7%	76.8%
	very good	Count	1	0	13	14
		% of Total	.7%	.0%	8.6%	9.3%
Total		Count	1	61	89	151
		% of Total	.7%	40.4%	58.9%	100.0%

Source: Survey data, 2010.

4.5 Focus Group Discussion

In all the FGD, the points raised were similar and are summarized as follows:

4.5.1 Marketing Participation of Members in Dairy Cooperatives

For this particular study, marketing participation is divided into two components. These are decision making with respect to dairy marketing through cooperatives and involving in the dairy marketing functions of the dairy cooperatives.

They stated that most of the cooperative members have understood the advantages and benefits of being organized in a cooperative, rather than being alone. The marketing participation of members in their dairy Cooperatives is reflected mostly in terms of supply or sale of raw milk to the society. Members are also involved in purchase of processed dairy products like butter and animal feeds as well as in receiving market information to some extent. According to the participants, though the members have been participating in their dairy marketing, it was not as enough as the extent that it would have been expected to be. Surprisingly enough, in some dairy cooperative societies, the officials themselves do not sell milk to their cooperatives. They also identified that the marketing participation of members in their dairy Cooperatives varies from cooperative to Cooperative and from one member to another member depending upon various personal, situational, psychological, and socio-economical constraints of the members discussed below.

4.5.2 Constraints perceived by members of FGD

Participants of the FGD explained that there are various personal, situational, psychological, and socio-economical factors that hinder members' of dairy Cooperatives from effective marketing participation. These include: Lack of Access to market for their dairy products, lack or absence of milking cows (due to cease of lactation period of dairy cows and sudden death of a cow as a result animal diseases), traditional dairy marketing system (no modern and efficient dairy marketing system), lack of timely and reliable market information and fair price for their dairy products, scattered (non-coordinated) local milk markets, unreliable milk supply, low productivity of local breeds, no milk processing plants, weak transfer of market information, price fluctuation of dairy products, high transaction costs and ever increasing in the price of animal feeds , lack of improved dairy cows and high cost of exotic breeds, shortage of formulated animal feeds and grazing land, lack of animal health posts and clinics, lack of

AI(Artificial Insemination)services and access to credit, lack of technicians trained in AI, reluctance of members in delivering milk to their society, failure of members to fulfill their membership obligation like payment of share capital, Poorly developed infrastructure like roads, water supply, and electric power , lack of trained manpower in dairy societies, lack of commitment and negligence of members and Cooperative officials to be avail on society's regular and special meetings and pass resolutions, lack of strong technical support from Cooperative promotion offices found at different levels, lack of adequate awareness of members about their cooperatives, members lack the sense of ownership of their societies(most dairy cooperative members do not trust their elected officials), lack of adequate training of members, officials, and hired staff of the cooperatives, poor culture of the community with respect to milk consumption, lack of internal control and misuse of the society's property, lack of business plan in the dairy societies, weak members and other customers treatment by the societies, lack of efficient societies' resource utilization, and members usually do not consult their family members and experts with respect to dairy marketing.

4.5.3 Suggestions of Participants of FGD

At the end of the discussions, the participants recommended the following in order to improve the participation of members in their dairy cooperatives:

- All Members and officials must be committed in delivering milk and use the services provided by the dairy societies regularly. Dairy cooperative Officials should be dedicated in discharging their responsibility.
- Members should purchase additional share capital and free gift of one litre of milk per month so as to strengthen the financial position of their dairy cooperatives
- They pointed out that the primary dairy cooperatives must be organized in one strong dairy cooperative union and gradually stepping up towards the formation of cooperative federation so as to tackle challenge of market access to their milk and strengthen the bargaining power and thereby achieving the economies of scale.
- To benefit the members and potential members of dairy cooperatives more, the provision of high yielding dairy cows and animal feeds should be improved.
- The responsible authority in charge of cooperative promotion and other stakeholders should provide continuous and relevant training and education for members, officials, and hired staff of the cooperatives. Furthermore, they added that selected

members from the dairy cooperatives should be trained as technicians of artificial insemination.

- Establishing milk processing factory in the area and employing the use of milk coolers , supply of good quality animal feeds from the cheap sources to Cooperative members at fair price
- The government should develop the strategy to secure adequate amount of credit facilities to small scale resource poor dairy farmers at fair interest cost and convenient terms of payment.
- Expanding the veterinary services in order to tackle the prevalent animal diseases

Figure 5 Milk on delivery at the collection centre by Members of dairy Cooperative.
Source: Primary data, 2010.

4.6 Level of marketing participation of members dairy cooperatives

The dependent variable for this study is members' marketing participation in dairy cooperatives. Members' marketing participation in dairy marketing is measured in terms of the frequency of transactions members make with their dairy cooperatives. For this particular study, members' frequency of transactions in dairy cooperatives is expressed as always, sometimes, and never.

There are two components of members' marketing participation. These are decision making with respect to dairy marketing through cooperatives and involving in the dairy marketing functions of the dairy cooperatives. The frequency of transactions of both components of marketing participation is expressed as 'regularly (3)', 'sometimes (2)', and 'never (1)' ordinal measuring

scales.The results of survey of the members' marketing participation revealed that most of the dairy cooperative members, i.e. 89 members (58.9%) were regular participants in decision making with respect to dairy marketing through cooperatives and involving in the dairy marketing functions of the dairy cooperatives simultaneously and 61 members (40.4%) participated some times in simultaneous decision making with respect to dairy marketing through cooperatives and involving in the dairy marketing functions of the dairy cooperatives . Only 1 member (0.7%) was found to be never participated in simultaneous decision making with respect to dairy marketing through cooperatives and involving in the dairy marketing functions of the dairy cooperatives (Table 6).

Table 6.Marketing Participation of members in dairy cooperatives.

S.no	Components of marketing participation	Regularly (3)		Sometimes(2)		Never(1)		Total	
		Freq	%	Freq	%	Freq	%	Freq	%
1	Decision Making with respect to Dairy Marketing through cooperatives	89	58.9	61	40.4	1	0.7		
2	Involving in the Dairy Marketing functions of the Dairy Cooperatives	89	58.9	61	40.4	1	0.7	**151**	**100**

Source: Survey result, 2010.

4.7. Factors influencing members' marketing participation in dairy cooperatives

Prior to running the ordinal logistic regression analysis, all the quantifiable (continuous) variables were checked with multi-co linearity test using VIF (Variance Inflation Factor) and it was found that there was no multi-co linearity problem. Hence, no variable was removed and all the seven

continuous independent variables have been used in the analysis (Table 3 of the appendix). Likewise, the results of the computation of Pearson test correlation revealed that there was no serious problem of association among continuous variables. The summary statistics of the independent variables used in the analysis is depicted in Table 1 and 2 of the appendices.
In this study the dependent variable, members' marketing participation in dairy cooperatives, was hypothesized, as it has no difference among members. However, it was found that members' marketing participation in dairy cooperatives varied from one member to another and from a cooperative to cooperatives. Some members of the dairy cooperatives participated in dairy marketing regularly while other members did so sometimes. The rest members of the cooperative societies, on other hand, have never participated in dairy marketing in the year under study. It was tried to identify the relation and the significance of marketing participation in dairy cooperatives and members' personal, socio-economic, psychological, and situational data using statistical methods such as multinomial logistic regression model and Pearson correlation. Based on the Pearson correlation analysis;

Number of milking Cows owned, Position of a member in the cooperative, Information seeking behavior, Distance to the nearest Dairy Cooperative's milk collection centre, Training undergone in dairy marketing, and Communication skill were found to be statistically significant at P= 0.05 and 0.01significance levels and correlated with members' marketing participation in dairy cooperatives. Number of milking Cows owned, Position of a member in the cooperative, and Training undergone in dairy marketing were found to be positively correlated with members' marketing participation in dairy cooperatives at P= 0.05 significance level . Similarly, Information seeking behavior and Communication skill were found to be positively correlated with members' marketing participation in dairy cooperatives at P= 0.01significance level. However, Distance to the nearest Dairy Cooperative's milk collection
centre, was found to be negatively correlated with members' marketing participation in dairy cooperatives at P= 0.05 significance level .Other explanatory variables like sex, Age, Marital status, Educational level, Members' Family size, Experience in dairy marketing through cooperatives, Size of land holding, annual income from dairy activities, Milk Production per day, Milk Purchased through Cooperatives, Availability of market information, Cooperative Price for Milk, Days of fasting, Indebtedness, and Perception about dairy cooperatives were found to have

no significance relation to the members' marketing participation in dairy cooperatives.

More over, the result of correlation analysis has shown that the relation of one independent variable; access to credit, with dependent variable (members' marketing participation in dairy cooperatives) could not be computed neither as significant nor insignificant as it was constant throughout all the 151 member respondents.

Table 28. Correlation result for significant variables for Marketing Participation in dairy cooperatives.

Selected explanatory variables		Number of milking Cows owned	Position of a member in the cooperative	Information seeking behavior	Distance to the nearest Dairy Cooperative's milk collection centre	Training undergone in dairy marketing	Communication skill	Marketing Participation in dairy cooperatives
Number of milking Cows owned	Pearson Correlation	1	.368(**)	.121	-.228(**)	.167(*)	.172(*)	.170(*)
Position of a member in the cooperative	Pearson Correlation	.368(**)	1	.330(**)	-.329(**)	.321(**)	.300(**)	.168(*)
Information seeking behavior	Pearson Correlation	.121	.330(**)	1	-.099	.133	.456(**)	.245(**)
Distance to the nearest Dairy Cooperative's milk collection centre	Pearson Correlation	-.228(**)	-.329(**)	-.099	1	-.134	-.030	-.181(*)
Training undergone in dairy marketing	Pearson Correlation	.167(*)	.321(**)	.133	-.134	1	.097	.185(*)
Communication skill	Pearson Correlation	.172(*)	.300(**)	.456(**)	-.030	.097	1	.248(**)
Marketing Participation in dairy cooperatives	Pearson Correlation	.170(*)	.168(*)	.245(**)	-.181(*)	.185(*)	.248(**)	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: Survey data, 2010.

Table 29 Correlation result for insignificant variables for Marketing Participation in dairy cooperatives

Selected explanatory variables		SEX	AGE	marital status	educational level	family size	Experience in dairy marketing through cooperatives	Marketing Participation in dairy cooperatives
SEX	Pearson Correlation	1	-.081	-.041	.001	.061	-.098	.045
AGE	Pearson Correlation	-.081	1	.181(*)	-.566(**)	.740(**)	.255(**)	.084
marital status	Pearson Correlation	-.041	.181(*)	1	-.157	.047	.013	-.019
educational level	Pearson Correlation	.001	-.566(**)	-.157	1	-.477(**)	-.062	-.092
family size	Pearson Correlation	.061	.740(**)	.047	-.477(**)	1	.285(**)	.084
Experience in dairy marketing through cooperatives	Pearson Correlation	-.098	.255(**)	.013	-.062	.285(**)	1	.090
Marketing Participation in dairy cooperatives	Pearson Correlation	.045	.084	-.019	-.092	.084	.090	1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Source: Survey data, 2010.

Table30. (Continued) Correlation result for insignificant variables

Selected explanatory variables		size of land holding of the respondent	annual income from dairy activities	Milk Production per day	Milk Purchased through Cooperatives	Availability of market information	Marketing Participation in dairy cooperatives
size of land holding	Pearson Correlation	1	.248(**)	.261(**)	-.167(*)	-.028	.009
annual income from dairy activities	Pearson Correlation	.248(**)	1	.844(**)	-.299(**)	.070	.159
Milk Production per day	Pearson Correlation	.261(**)	.844(**)	1	-.371(**)	.066	.140
Milk Purchased through Cooperatives	Pearson Correlation	-.167(*)	-.299(**)	-.371(**)	1	.109	-.112
Availability of market information	Pearson Correlation	-.028	.070	.066	.109	1	.014
Marketing Participation in dairy cooperatives	Pearson Correlation	.009	.159	.140	-.112	.014	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: Survey data, 2010.

Table 31. (Continued) Correlation result for insignificant variables for Marketing Participation in dairy cooperatives.

Selected explanatory variables		Cooperative Price for Milk	Days of fasting	Perception about dairy cooperatives	Indebtedness	Marketing Participation in dairy cooperatives
Cooperative Price for Milk	Pearson Correlation	1	.031	.020	-.182(*)	.043
Days of fasting	Pearson Correlation	.031	1	.010	-.040	.074
Perception about dairy cooperatives	Pearson Correlation	.020	.010	1	-.036	-.136
Indebtedness	Pearson Correlation	-.182(*)	-.040	-.036	1	-.027
Marketing Participation in dairy cooperatives	Pearson Correlation	.043	.074	-.136	-.027	1

* Correlation is significant at the 0.05 level (2-tailed).
Source: Survey data, 2010.

4. 7.1. Result of Ordinal Logistic Regression Analysis

Ordinal Logistic Regression analysis was used to assess various factors which influence the marketing participation of members of the primary dairy cooperatives of the study area. When the dependent variable is categorical with more than two levels and the explanatory variables are continuous, categorical or both, the appropriate model that can be employed to analyze the influence of independent variables on dependent variable is multinomial logistic regression. As the response variable (marketing participation of members in dairy cooperatives) was measured

based on ordinal scale i.e., from *1(Never) to 3(regularly)* and categorical explanatory variables (personal, situational, psychological, and socio-economic) involved were both categorical and continuous, and thus, the most suitable model used is ordinal multinomial logistic regression.

The joint effect of a group of the independent variables on members' (respondents') marketing participation in dairy cooperatives is studied by framing the ordinal logistic regression equation of the variable **"Y"** on the other independent variables. The model is specified as follows:

$$\log\left(\frac{\text{Prob}(Y=j)}{\text{Prob}(Y=r)}\right) = \mathbf{X}_j\beta$$

Where, Y- Response Variable (Members' Marketing Participation in Dairy Cooperatives)

j – Level /Order of the response variable in such a way that j= 1, 2. . . r-1

r - Number of response variable levels

X_j- j^{th} explanatory variable

4.7.2. Analysis of Whole Model of the Ordinal Logistic Regression

Null Hypothesis (H_0):

The explanatory variables (personal, psychological, situational, and socio-economic) do not have any or little influence on dependent variable (Members' marketing participation in dairy cooperatives), or equivalently;

The logistic regression is not useful (The specified or proposed logistic regression model is not significantly better than a reduced logistic regression model(a model without any effects except the intercepts)), or

All the logistic regression parameters are zero.

Alternative/research Hypothesis (H_A): H_0 is not true.

The whole model result of the ordinal logistic regression model analysis has shown that there was a significant relationship between the explanatory variables and dependent variable. The null hypothesis was rejected at 0.05 significance level (Prob >ChiSq = 0.0307).In other words the explanatory variables had influence on members' marketing participation in dairy cooperatives or the logistic regression was useful. In addition to this, the R^2 (the Determination Coefficient) of the whole model test revealed that 24.32% of the variation on dependent variable was explained by explanatory variables used in the logistic regression analysis.

Table 32. Whole Model Test of logistic regression analysis.

Model	-Log Likelihood	DF	Chi-Square	Prob>ChiSq
Difference	26.114	35	52.227	0.031
Full	81.244			
Reduced	107.357			
R Square (U)		0.2432		
Observations (or Sum Wgts)		151		

Source: Computed Survey data, 2010.

Table33. Parameter Estimates of the significant variables of Ordinal Logistic Regression Model

Term	Estimate	Std Error	Chi-Square	Prob>ChiSq.
Intercept[2]	-3.6	4.691	0.59	0.443
Intercept[3]	1.872	4.701	0.16	0.691
EXP_DM(Experience in Dairy Marketing)	5.653	2.342	5.83	0.016
MPU_COOP (Milk Purchased through Cooperatives)	0.723	0.350	4.28	0.039
TRG_DMKT(Training Undergone in Dairy Marketing)	1.747	0.717	5.95	0.015
PRCP_COOP(Perception about Cooperatives)	0.877	0.429	4.18	0.041

Source: Computed Survey data, 2010

4.8. Discussion on the Significant Explanatory Variables

The table shows that the co-efficient of determination (R^2) is 0.2432. It denotes that only 24.32 percent of the total variation of the dependent variable "Y" (marketing participation of members in dairy cooperatives) is explained by the independent variables included in the logistic regression analysis. Therefore, one must look beyond the listed independent variables in order to find out factors influencing marketing participation of members in dairy cooperatives. Hence, the other factors that determine the participation of members in their dairy Cooperatives may include lack of market for their dairy products, poor leadership quality of the management committee of the dairy Cooperatives, low attention given to the dairy sector, and other related socio-economic factors.

Out of the twenty-three (23) explanatory variables hypothesized to influence the marketing participation of members' (respondents) in their respective dairy Cooperatives ,only four of them

were found to have statistical significance. The parameter estimates of the ordinal logistic regression model (Table 33) shows that Experience in Dairy Marketing (EXP_DM), Milk Purchased through Cooperatives (MPU_COOP), Training Undergone in Dairy Marketing (TRG_DMKT), and Perception about Cooperatives (PRCP_COOP) are among the significant factors affecting marketing participation of members in dairy cooperatives. All these four explanatory variables were significant at 95% confidence interval (at α =0.05 significance level). All other variables such as Age, Sex , Marital Status, Educational Level, Family Size, Information seeking behavior, Extension participation, Position of a member in a cooperative, indebtedness, Size of land holding, Number of milking cows owned, Milk Production per day, Availability of marketing information, Annual income from dairy, Days of fasting, Distance to the nearest Dairy Cooperative's milk collection centre ,Cooperative Price for Milk, Communication skills were not powerful enough in the analysis of multi-nomial logistic regression in explaining the factors determine the marketing participation of the respondents or sampled members in their dairy cooperatives. Moreover, one explanatory variable, Access to Credit, was not computed in the multi-nomial logistic regression analysis as it was constant (all the 151 respondents replied that they had no access to credit to facilitate their dairy businesses). In addition to this, the Effect Wald Test of the multi-nomial logistic regression analysis shows that the effects that include Age, Sex , Marital Status, Educational Level, Family Size, Information seeking behavior, Extension participation, Position of a member in a cooperative, indebtedness, Size of land holding, Number of milking cows owned, Milk Production per day, Availability of marketing information, Annual income from dairy, Days of fasting, Distance to the nearest Dairy Cooperative's milk collection centre ,Cooperative Price for Milk, and Communication skills do not contribute significantly to the model fit (They were not significant in influencing the dependent variable(marketing participation of members' in dairy Cooperatives) though they were hypothesized to influence the same).

The results of the parameter estimates of the logistic regression model are interpreted in relation to each of the statistically significant variables.

Experience in Dairy Marketing

Result of the logistic regression model revealed that this variable had a significant positive influence on the members' marketing participation in dairy Cooperatives, as to what was expected. The coefficient of this variable (Experience in Dairy Marketing) is statistically

significant at 5% significance level. The positive relationship is due to the fact that experience of the farmer-member is likely to have a range of influences on adoption and it will improve members' active participation in dairy product marketing through cooperatives. Member farmers with higher experience appear to have often full information and better knowledge to evaluate the advantage of pursuing dairy marketing to their cooperatives. From the parameter estimates (Table 33), one can conceptualize that when experience in dairy marketing increases by one unit (Year), the likelihood or probability of members' participation in dairy Cooperatives is also increases by a factor/multiple of 5.653 , other things remaining constant (ceteris paribus)

Milk Purchased through Cooperatives

Milk Purchased through Cooperatives and members' marketing participation in dairy Cooperatives had a significant positive relationship consistent to expectation/hypothesis. This means that as the quantity of milk purchased through the dairy cooperatives increases, members marketing participation in dairy cooperatives also increases and vice-versa. The coefficient of this variable (Milk Purchased through Cooperatives) is statistically significant at 5% significance level.

From the parameter estimates (Table 33), one can understand that as milk purchased through the dairy cooperatives increases by one factor, the probability of members' participation in dairy Cooperatives is also increases by a multiple of 0.723, other things remaining constant (ceteris paribus).

Training Undergone in Dairy Marketing

The parameter estimate of the logistic regression analysis shows that Training Undergone in Dairy Marketing and members' marketing participation in dairy Cooperatives had a significant positive relationship.

The coefficient of this variable (Training Undergone in Dairy Marketing) is statistically significant at 5% significance level.

From the parameter estimates (Table 33), one can understand that as Training Undergone in Dairy Marketing increases by one factor, the probability of members' participation in dairy Cooperatives is also increases by a multiple of 1.747, other things remaining constant (ceteris paribus).

Perception about Cooperatives

Perception about Cooperatives and members' marketing participation in dairy Cooperatives had a significant positive relationship consistent to expectation/hypothesis. This means that as the members had positive perception towards their dairy cooperatives, their marketing participation in dairy cooperatives also increases and vice-versa. The coefficient of this variable (Perception about Cooperatives) is statistically significant at 5% significance level.

The result of parameter estimates (Table 33) reveals that as milk purchased through the dairy cooperatives increases by one factor, the probability of members' participation in dairy marketing also increases by a multiple of 0.723, other things remaining constant (ceteris paribus).

4.9. Constraints in dairy marketing perceived by members

Sampled members of the dairy cooperatives in the study area explained that there are various personal, situational, psychological, and socio-economical constraints that hinder them from participating effectively in marketing of their dairy products particularly whole milk through their respective dairy cooperatives.

Some of the constraints perceived by the members of the Cooperatives include; lack of market access for their dairy products especially during the fasting months, Lack of facilities (cooling, transportation, and storage), low productivity of local breeds, lack of improved dairy cows , high cost of exotic breeds, and grazing land, shortage of land to plant quality feed, members' low attention towards dairy sector(In the study area, most of the routine dairy activities were left aside for women and children) , traditional dairy marketing system (no modern and efficient dairy marketing system),unfair price for their dairy products, non-coordinated local milk markets, unreliable milk supply, price fluctuation of dairy products, high transaction costs and ever increasing in the price of animal feeds , lack of animal health posts and clinics, lack of AI(Artificial Insemination)services and access to credit, reluctance of members in delivering milk to their society, Poorly developed infrastructure like roads, water supply, and electric power , lack of trained manpower in dairy societies, lack of commitment and negligence of members to be avail on society's regular and special meetings and pass resolutions , low commitment and loyalty of members in delivering milk to their cooperatives, low commitment and negligence of Cooperative officials in discharging their responsibilities, Lack of transportation and storage

facilities, Inadequate training and technology transfer, lack of strong technical support from Cooperative promotion offices found at different levels, lack of adequate awareness of members about their cooperatives, members lack the sense of ownership of their societies(most dairy cooperative members do not trust their elected officials), lack of adequate training of members, officials, and hired staff of the cooperatives, poor culture of the community with respect to milk consumption, lack of internal control and misuse of the society's property, lack of business plan in the dairy societies, poor treatment of members and other customers by the societies, lack of efficient societies' resource utilization, and members usually do not consult their family members and experts with respect to dairy marketing.

Dairy Cooperative members were asked to rank the constraints that hampered them from effectively participating in their Cooperatives in order of importance. The five most important constraints were lack of market access for members' milk, Lack of improved dairy cows, Lack of facilities (cooling, transportation, and storage), shortage and poor quality of animal feeds, and Lack of Access to credit facilities to expand dairy activities.

4.9.1. Lack of market access for members' milk (especially during the fasting months)

Most of the survey respondents (more than 86 percent) perceived that lack of market access for members' milk (especially during the fasting months) is the most challenging constraint that was treating members' participation in their dairy cooperatives. The situation restricted the opportunities of dairy farmers from further income generation. This in turn reduced the initiatives of dairy farmers to participate actively in their dairy Cooperatives and related economic transactions. As a result, the dairy farmers in the study area were experiencing subsistent dairy production systems rather than market oriented.

4.9.2. Lack of improved dairy cows

The second most important constraint perceived by interviewed members and that hinder them from effective participation in their dairy Cooperatives was lack of improved or cross breed dairy cows. Lack of high yielding improved dairy cows was the critical constraint that has been pressurizing the small scale dairy producers (both members and non-members of the dairy

cooperatives) in the study area. In addition to the unavailability of high yielding exotic dairy breeds, their associated high purchasing cost is another challenge that has been treating the members of dairy cooperative societies. The participants of FGD (Focus Group Discussion) have mentioned that the unit purchase price of one high yielding exotic dairy cow or heifer has reached to 13,000. Birr (Ethiopian Currency) which is unlikely to be affordable by resource-poor small scale dairy farmers in the study area.

4.9.3 Lack of facilities (cooling, transportation, and storage)

As milk is a perishable commodity and its life is shorter than vegetables, availability of effective facilities like coolers, storage, and transportation facilities are vital. However, these facilities were among the bottlenecks of the dairy cooperatives in the surveyed area.

4.9.4. Shortage and poor quality of animal feeds

The sampled members of the dairy cooperatives were ranked the Shortage and poor quality of animal feeds as the fourth main constraint in dairy production and marketing More than 60 percent of the respondents replied that they had difficulties in having adequate feeds for their dairy cattle. The constraint is not only the inadequacy of animal feeds, but the available feed in not well formulated and thus of poor in nutritional quality. In connection with this, most of the members had shortage of land to plant/grow high quality animal feeds in their home yard. In addition to this, shortage of grazing land and poor quality of the pastures grown on the land were also predisposing factors to the constraint.

4.9.5. Lack of Access to credit

It is obvious that credit relaxes the financial constraint of smallholder farmers. It enables the dairy farmers to purchase essential dairy inputs (improved cross breed cows, concentrate feeds, milking utensils, and others) and expansion of their dairy businesses.

About 60 percent of the members of the dairy cooperatives have perceived that access to credit was the fifth most important constraint that adversely influenced their effective marketing participation businesses.

Table 34. Major constraints in effective dairy marketing.

S.no	Major Constraints	Most Important (3)	Important (2)	Least important (1)
1	Lack of market access for members' milk especially during the fasting months	130(86.10)	16(10.59)	5(3.31)
2	Lack of improved dairy cows	97(64.24)	41(27.15)	13(8.61)
3	Lack of facilities (cooling, transportation, and storage)	93(61.59)	25(16.55)	33(21.86)
4	shortage and poor quality of animal feeds	91(60.26)	34()	26(21.86)
5	Lack of credit to expand dairy activities	88(58.28)	42(27.81)	21(13.91)
6	Poorly developed infrastructure like roads, water supply, and electric power	85(56.29)	46(30.46)	20(13.25)
7	high cost of exotic breeds	84(55.63)	50(33.11)	17(11.26)
8	high transaction costs and ever increasing in the price of animal feeds	83(54.96)	40(26.41)	28(18.63)
9	members' low attention towards dairy sector	80(52.98)	39(25.83)	32(19.21)
10	low commitment and negligence of Cooperative officials in discharging their responsibilities	76(50.33)	50(33.11)	25(16.56)

Figures (numbers) in the parenthesis show the percentage (%)

Source: Survey result, 2010.

4.10 Suggestions for improvement

In order to improve the participation of members in dairy marketing and thereby alleviate the prevailing sugar-coated or principal challenges that have been adversely influenced the movement and development of dairy sector, sampled dairy cooperative members have suggested the following strategies in the order of importance.

Table 35 Suggestions given by sampled members of dairy cooperatives for improvement

S.no	Suggestions	Most Important (3)	Important (2)	Least important (1)
1	The dairy stakeholders(members, cooperatives, Government, and NGOs) should think of better dairy products market access and establishment of milk processing plant at dairy coop. union level	110(72.85)	23(15.23)	18(11.92)
2	Provision of high yielding improved exotic dairy cows that can adapted the agro-ecology of the area	97(64.24)	25(16.56)	29(19.2)
3	The dairy cooperatives must be fully capacitated with coolers, storage , and transportation facilities	94(62.28)	30(19.86)	27(17.86)
4	Provision of better quality feeds at reasonable price and launching programs for fodder development	93(61.58)	37(24.50)	21(13.92)
5	There should be access to credit especially for small holder farmers	89(58.94)	29(19.21)	33(21.85)
6	Improving the status of infrastructures like road, water supply, and hydroelectric power	85(56.29)	42(27.81)	24(15.90)
7	Improving service delivery of the of artificial insemination and training AI technicians from the members	83(54.96)	33(21.86)	35(23.18)
8	Enhancing the formation of dairy unions and federation as well as establishment of animal feed processing factory so as to obtain the economies of scale (bargaining power.)	78(51.65)	47(31.11)	26(17.24)
9	Continuous education and training for members, cooperative officials, and hired staff to improve their awareness about the dairy sector	75(49.66)	50(33.11)	26(17.23)
10	Continuous follow up and control the activities of cooperative officials and taking corrective measures on the problems observed as necessary.	73(48.34)	52(34.44)	26(17.22)

Source: Survey result, 2010.

Figures in the parenthesis show the percentage (%)

In addition to the above solutions, they stressed that the owners (all members and officials) must be committed in delivering milk and use the services provided by the dairy societies regularly. They also added that Dairy cooperative Officials should be dedicated in discharging their responsibility.

Chapter V: Conclusions and Recommendations

5.1 Conclusions

Based on the results of this study, the following conclusions can be made briefly:

- Milk Cooperatives are for improving the economic lot of the large number of small farmers and agricultural laborers. In a mixed farm, crop production and dairy development mutually contribute and would result in added income to the subsistence farmer. Widespread unemployment and underemployment also present a strong case for the adoption of dairy farming and mixed farming to mitigate this problem.
- The advent of dairying has been a boon for dairy farmers, but it has been of particular importance to those segments of the society that have been traditionally weak. These are the small landholders, the landless laborers, and women. It has provided people, who could only depend on payments from small seasonal crops or from occasional labor, with a year round source of income. Effective participation of members in their dairy their cooperatives, would certainly make a significant change in the socio-economic life of the communities of the study area in particular and of rural mass of Ethiopia as a whole. At the same time, the urban consumers will also get good milk and milk products at a fair price.

- The marketing participation of members in their dairy Cooperatives was reflected mostly in terms of supply or sale of raw milk to the society. Members were also involved in purchase of processed dairy products like butter and animal feeds as well as in receiving market information to some extent. Participants of the Focus Group Discussion (FGD) identified that members have been participating in their cooperatives in dairy marketing though it was not as enough as the extent that it would have been or expected to be.
- Participants of the FGD explained that there were various personal, situational, psychological, and socio-economical factors that hinder members' of dairy Cooperatives from effective marketing participation.
- Lack of market access for members' milk especially during the fasting months, Lack of improved dairy cows, Lack of facilities (cooling, transportation, and storage), shortage

and poor quality of animal feeds, Lack of credit to expand dairy activities, Poorly developed infrastructure like roads, water supply, and electric power, high cost of exotic breeds, high transaction costs and ever increasing in the price of animal feeds, members' low attention towards dairy sector, and low commitment and negligence of Cooperative officials in discharging their responsibilities were among the main constraints perceived by members of dairy cooperatives and participants of FGD.

- Formation of strong dairy cooperative union and gradually upgrading to cooperative federation level, provision of high yielding dairy cows and animal feeds, continuous and relevant training and education for members, officials, and hired staff of the cooperatives, establishing milk processing plant, employing the use of milk coolers, supply of good quality animal feeds from the cheap sources to Cooperative members at fair price, credit facilities to small scale resource poor dairy farmers, expanding the veterinary services were some of the suggestions given to in order to improve the participation of members in their dairy cooperatives:
- The results of survey of the members' marketing participation revealed that most of the dairy cooperative members, i.e. 89 members (58.9%) were regular participants in decision making with respect to dairy marketing through their dairy cooperatives and involving in the dairy marketing functions of the dairy cooperatives simultaneously and 61 members (40.4%) were participated some times in decision making with respect to dairy marketing through cooperatives and involving in the dairy marketing functions of the dairy cooperatives simultaneously. Only 1 member (0.7%), contrary to the by-laws of the societies, was found to be never participated in simultaneous decision making with respect to dairy marketing through cooperatives and involving in the dairy marketing functions of the dairy cooperatives.
- The conducted survey revealed that 134 (88.7%) of the sample respondents were male and 17 respondents (11.3%) were female. The average age of the respondents was 39.07 years and the minimum and maximum age observed were 26 years and 62 years respectively.
- Almost all of the respondents (98.7%) were married and the rest 1.3% of them were observed to be widowed while most of the respondents (37.7%) have attained the educational level of grade 9-12 and only 6% of the sampled members had attained an

educational status of diploma level.

- Each respondent had 4.39 family sizes on average and the total number of family size of the sampled respondents was 663 persons.
- Most of the respondents (52.32%) had above four years of experience in dairy marketing through cooperatives and only 1.33% of the respondents had Up to one year experience in dairy marketing through cooperatives. Similarly, the average Size of land holding of the respondents was 1.10 hectares.
- The majority of the respondents (79.5%) owned one milking dairy cow each. 19.2% and 1.3% of the respondents had two and three milking cows each respectively. Meanwhile, the average milk production per day of the members of dairy cooperatives was 7.62 litres and the minimum and maximum milk produced per day was 2 litres and 23 litres respectively.
- Most of the dairy cooperative members (81.5%) replied that their dairy Cooperatives were not ready to purchase all amount of milk delivered to them due to lack market for milk and milk products like cheese and butter.
- Almost all (97.4%) of the respondents responded that they had no debt during the year understudy and only 2.6% of the respondents had debt up to Br 500.
- Most of the respondents, i.e. 135 members (89.4%) replied that they had enough opportunities of getting market information from different sources mainly from dairy cooperative itself, personal observations, neighbors, relatives, and telephone.
- 45.0% of the respondents replied that their dairy Cooperatives paid less than the then(2001 E.C) market price of members' whole milk and 55.0% of the respondents responded that their dairy cooperatives paid similar or better price(more than the then current price of milk) for the milk delivered by their members. These disparity(partiality) in terms of pricing was observed due to the fact that all the four sampled cooperatives had different pricing policies.
- The respondents have fasted for 106.34 days on average with regard to their spiritual faith. The minimum and maximum days of fasting so far observed were 0 day and 181 days respectively.
- 82.8% of the respondents were ordinary members of the dairy societies and the rest of them (17.2%) were on a position of cooperative official or office bearer.

- Most of the respondents (64.9%) had sought information with respect to dairy marketing 'sometimes' while 23.2% of the respondents did so 'rarely'. Only 11.9% of them had sought information 'always'.
- 78.8% of the respondents had participated in extension activities sometimes and 17.2% of them never participated in extension activities. Only 4.0% of them were participated regularly in different extension activities with respect to dairy marketing.
- All of the respondents replied that they had no access to credit to expand and upgrade their dairy business activities.
- The average distance spent by the respondents to reach the nearest Dairy Cooperative's milk collection centre was 0.52 hour (31.2 minutes).
- Most of the interviewed members of dairy cooperatives (79.5%) had not undergone any training with respect to dairy marketing at all and 17.2% of the respondents have undergone dairy marketing training once.
- 70.9% of the respondents had positive Perception about dairy cooperatives while 18.5% of the respondents had negative Perception about dairy cooperatives. It was difficult to categorize and report the perception's of 10.6% of the respondents as negative or positive.
- Based on the survey result, 76.8% of the respondents had good communication skill while 9.3% of the sampled members had very good communication skill with respect to dairy marketing. The rest 13.9% of the respondents had poor communication skill with respect to dairy marketing.
- Number of milking Cows owned, Position of a member in the cooperative, and Training undergone in dairy marketing were found to be positively correlated with members' marketing participation in dairy cooperatives at P= 0.05 significance level . Similarly, Information seeking behavior and Communication skill were found to be positively correlated with members' marketing participation in dairy cooperatives at P= 0.01 significance level. However, Distance to the nearest Dairy Cooperative's milk collection centre, was found to be negatively correlated with members' marketing participation in dairy cooperatives at P= 0.05 significance level.
- The whole model result of the ordinal logistic regression model analysis has shown that there was a significant relationship between the explanatory variables and dependent

variable. The null hypothesis is rejected at 0.05 significance level (Prob >ChiSq = 0.0307).

- The logistic regression analysis has shown that the co-efficient of determination (R^2) was 0.2432. It denotes that only 24.32 percent of the total variation of the dependent variable "Y" (marketing participation of members in dairy cooperatives) was explained by the independent variables included in the logistic regression analysis. Therefore, one must look beyond the listed independent variables in order to find out factors influencing marketing participation of members in dairy cooperatives.
- The parameter estimates of the ordinal logistic regression model has shown that Experience in Dairy Marketing , Milk Purchased through Cooperatives , Training Undergone in Dairy Marketing , and Perception about Cooperatives were among the significant factors affecting marketing participation of members in dairy cooperatives. All these four explanatory variables were significant at 95% confidence interval (at α =0.05 significance level).
- Moreover, one explanatory variable, Access to Credit, was not computed in the multi-nomial logistic regression analysis as it was constant (all the 151 respondents replied that they had no any access to credit to facilitate their dairy businesses.)
- This result of the study has shown some similarities and differences with previous studies made on factors determining marketing participation of members in dairy cooperatives. Analogous to this study result (finding), Verma and Rao (1969) also confirmed that farmers' training increases the participation of farmers in the farm practices over and above those in the control villages. In the same way, Johnson (1964) recommended that teaching a group of farmers with common interest in the organized classes was the most effective method of disseminating new knowledge on dairy practices and improved participation.
- Deribe (2007) found out that *age* of farmers was one of the demographic characteristic that influenced agricultural information network output negatively and thereby their participation in marketing. However, in this study, this explanatory variable was not correlated with members' marketing participation. Similarly, he found out that education is one of the important variables, which increases farmers' participation and access to acquire, process, and use agricultural related information contrary to this study result.

- Consistent with Deribe (2007), *family size* contributes to the variation in getting access to agricultural information (one of the components of marketing function.)It was found out that the larger the family size, the higher is the possibility to use a combination of technological packages (to participate in dairy marketing.) However, the result of this study shows differently that there is no any correlation between family size and members' dairy marketing participation.

- On the same verge, Arumugam (1983) stated that experience in agriculture had significant association with the participation of small farmers. The result of this study also confirms that Experience in Dairy Marketing had a significant positive association with the members' dairy marketing participation.
  - Most studies confirm that the information seeking behavior of farmers is *low and* favors low members participation in dairy marketing. Similarly, this study also confirms that Information seeking behavior had positive association with the dependent variable.
    - Deribe (2007) found out that the relation between extension participation and knowledge and participation in dairy farming was found to be positive and significant, contrary to study findings. In the same study, he found out that the relation between extension participation and knowledge and participation of dairy farming was found to be positive and significant, as opposed to the findings of this study carried out in Tiyo woreda.

  - The hypothesis that states the cooperative price for members' milk influences the marketing participation of milk was not found to be significant in this study. However, Chukwu (1990) found out that Price was one of the effects that the cooperatives pass on their members' economy. Similarly, Wilkins and Stafford, 1982; Fulton and Adamowicz, 1993; Misra et al., 1993; Klein et al., 1997 confirmed that if the cooperatives charge competitive price for their milk, the member farmers market it through their cooperatives (members participate in their cooperative dairy marketing.)
  - Bishop and McConnen (1999) concluded that the proximity of the cooperative for the farmer house reduces the cost of time and labor that the farmer spent in searching for

a buyer for his/her milk. Similarly, the result of this study also validated that the distance to the nearest dairy cooperative's milk collection centre is negatively associated with dairy marketing participation of members in their cooperatives.

5.2 Recommendations

In order to tackle the main constraints of dairy cooperatives identified during the survey study and improve marketing participation of members in their dairy cooperatives so as to realize the white revolution (that has happened in other parts of the world) through dairy cooperatives in the study area in particular and in the country as a whole, the following recommendations have been made.

- The dairy stakeholders (members, cooperatives, Government, and NGOs) should think of better market access for dairy products. Accordingly, primary dairy cooperatives and Arsi Dairy Union should conduct consumer survey or demand assessment for members' dairy produce in the main market outlets in the area. Based on the consumer survey result, the dairy product market should be segmented and different sales promotion methods suited for that specific dairy market should be adopted and revised from time to time(as necessary) so as to cope up with dynamic environment in which dairy cooperatives are working. Moreover, milk processing plant at dairy cooperative union level (when its financial position allows it to do so) must be established so as to convert the raw milk to other processed milk products and thereby elongate the shelf life of dairy products.
- There must be a national level dairy industry program like Operation Flood program of India so as to facilitate the enhancement of milk production in the country.
- The financial needs can be met from the sale of material assistance received in the form of milk and milk products, and ploughing back the funds for the development activities
- The major factor for the success of cooperative dairy industry is professionalisation of management. Appointment of veterinarians in all endeavors is recommended.
- The movement should be under an independent national body established and Patronized by the Federal and/or Regional Government.
- The primary milk cooperatives at kabele level should extend the following inputs to the

dairy farmers:

Animal Health:

(i) They should provide veterinary first aid in the kebele (primary cooperative level)

(ii) Assisting the milk producer farmers in preventive vaccination and inoculation

Artificial Insemination:

(i) They should carry out artificial insemination as and when required

(ii) They have to help members in maintain proper recording of artificial insemination

(iii) Extending help to milk producers for identification of animals for ear tagging

(iv) Following-up AI activity, pregnancy diagnosis, and its feed back

Feed and Fodder Development:

(i) Primary dairy cooperatives should procure and supply quality balanced cattle feed from the milk union and other available sources

(ii) They should demonstrate improved fodder cultivation to members.

(iii)They should procure and supply quality fodder seeds to farmers

- The primary dairy cooperative societies found in the zone must strengthen the Arsi Dairy Cooperative Union(The only dairy union found in Arsi zone) and the union should undertake the following activities:
- **Animal Health:**

(i) The union should organize of veterinary routes for regular and emergency services

(ii) The cooperative union has to undertake extension of necessary help to central diagnostic laboratory for disease diagnosis

(iii) The should handle Training of Primary Cooperatives' workers in Veterinary first aid

- The union must undertake preventive vaccination/inoculation of the dairy animals in cooperation with the government departments.

(B)Artificial Insemination (AI):

(i) The Dairy union has to establish semen banks for organizing the artificial insemination work.

(ii) It must involve in procurement and storage of frozen semen and liquid nitrogen for regular supply to primary cooperatives.

(iii) It should undertake regular follow-up on AI program

(iv)The union has to also involve in organization of sterility/infertility camp so as to alleviate the problems associated with infertility of dairy cows.

- Involving in training of lay-inseminators drawn from members of dairy cooperatives.

(C)Feeds and Fodder Development:

(i) The union has to involve in the Organization of feed and fodder development program

(ii) Production/procurement and supply of balanced cattle feed should be undertaken by the cooperative union.

(iii) The dairy union should ensure the procurement and supply of quality fodder seeds

(iv)The union should also undertake the Follow-up of the program (Feeds and Fodder Development)

(D) Extension activities:

The union should undertake the following extension activities;

(i) Organization of milk yield competition

(ii) Organizing audio visual shows and kebele level meetings

(iii) Helping the publication unit by providing required information and distribution materials to member cooperatives

(iv) Arranging visits of producer members to union's milk plant, cattle feed plant, AI Center, etc.

- Establishment of demonstration dairy farms and fodder farms.

Since one dairy union (Arsi Dairy Cooperative Union) organized at zonal level alone can not alleviate all challenges associated to dairy development, depending upon the development of primary cooperatives and other similar dairy unions found in other zones of Oromia and/or other regions, one Dairy Federation Cooperative at the Regional and/or Federal level has to be organized and handle the activities that cannot be carried out by a secondary dairy cooperative union.

The Federation that could be organized at regional and/or federal level may undertake the following activities:

(A) the services of Central diagnostic laboratory

(B) frozen semen production and supply

(C) liquid nitrogen production and delivery

(D) centralized publication units

- Responsible Government departments and/or dairy union should provide Continuous

education and training for members, cooperative officials, and hired staff to improve their awareness about the dairy sector and thereby ensuring effective members marketing participation in dairy cooperatives.

- Continuous follow up and controlling the activities of cooperative officials should be made by internal and external dairy cooperative stakeholders (members, controlling committee of the dairy cooperatives, responsible Government departments, potential members, NGOs working with dairy cooperatives, dairy products consumers, and the public at large) and taking corrective measures on the problems observed is imperative for the success of dairy development.

5.3. Implications for future research:

- Further research should be conducted to identify the factors (other than those factors that have been studied in this research) that influence the participation of members in dairy Cooperatives in other woredas of Arsi zone and other zones of the Oromia regional state as well as other parts of the country.
- Further research should be conducted to identify additional frames/models that should be adopted in marketing of milk and other milk products so as to empower small holder dairy farmers in the study area and other parts of the country.

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VII. Appendices:

Appendix 1 .An Interview Schedule developed for the study (English Version)

Mekelle University

College of Business and Economics

Department of Cooperative Studies

An Interview Schedule for the study of

'Multivariate Analysis of Marketing Participation of Members in Dairy Cooperatives in Arsi Zone, Ethiopia'

Woreda: _____

Kebele: _____ *Schedule No:* _____

Name of Cooperative: _____

Enumerator Name: _____

Date of interview: _____

General Instructions:

1. Give short introduction to each members before starting the interview, introduce your self to the members, greet them locally, get his/her name, and make clear the purpose and objective of the study.
2. Please ask each question plainly and patiently until the member understands your point. *Use only pencil*
3. Dear enumerator, fill the questionnaire according to the members' reply and do not put your own opinion.
4. Don't use technical terms while asking the member.
5. Please, put the answer of each member on the space provided and encircle in the choice.

Part I: Personal Characteristics:

- Name:_____
- Sex: 0= Male , 1=Female
- **Age: _____years.**

6. Marital status: _____

0= Single, 1=Married, 2=Divorced, 3=Widowed

5. Educational level: _____

S.N	***Level of education***	***Score***
1	**≥ grade 4**	**1**
2	**5th grade – 8th grade**	**2**
3	**9th grade – 12th grade**	**3**
4	**Diploma**	**4**
5	**Degree**	**5**

6. Total number of household size (Family size):_____

7. Experience in dairy marketing through cooperatives: _____

Years of Experience	*Score*
Up to one year	1
From one year to three years	2
From three years to four years	3
Above four years	4

Part II: Socio-Economic characteristics:

7. Do you own land? Yes = 0; No = 1
8. If yes, what is the size of your land in hectare? _____
9. Size of land set-aside for livestock grazing (in hectares)? _____
10. Do you know the total land size covered by crop (*in hectare*)? _____ in 2001E.C
11. Size of land rented for cropping_____ hectare; and land rented for livestock grazing_____ hectare. (if any)

12. Number of livestock owned at present.

S.N	Kind of livestock	Cross breed	Local breed	Total
1	Oxen			
2	Cows			
3	Milking cows			
3	Young bulls			
4	Calves			
5	Heifers			
6	Sheep			
7	Goats			

8	Chicken			
9	Horse			
10	Mule			
11	Donkey			

13. **Annual income from dairy activities.*(AN_INC)***

As the farmers have difficulty in stating their exact income, it is better to categorize them as follows:

Item level	*Score*
Up to 1000 Br	1
From 1000 Br to 2000 Br	2
From 2000 birr to 3000 Br	3
From 3000 Br to 4000 Br	4
Above 4000 Br	5

14. Milk Production per day (liters)

As the farmers have difficulty in stating the exact amount of milk produced a schedule is prepared as follows;`

I. How much fresh milk (in Litres) you got/produced from all of your dairy cows on average in the Year 2001E.C?

A. Daily average production = _____Litres.
B. Annual average production = _____ Litres.
C .Daily consumption = _____ Litres.
D. Annual consumption = _____ Litres
E. Quantity Sold per day = _____ Litres
F. Quantity Sold per year = _____Litres.

Other Dairy product/s like: (if any)

s.n		Quantity	Quantity consumed	Quantity sold	Price
1	Butter (kg)				
2	Cheese (kg)				

9. Milk purchased through cooperatives.

Does your cooperative accept (purchase) all the milk you delivered?
Yes = 1, No = 0

If your answer is No, mention the main reason/s? _____

_____

9.1. Did you sell milk to the cooperative in the last year (2001E.C)?
Yes=1, and 0 otherwise.

9.2 If yes, how much was the quantity sold and the price received as well?

S.No	Dairy Product	Total Quantity Sold(Litres)	
		2001 E.C Sales	
		Quantity(Litres)	Price received(EBR)/Lt
1	Raw Milk***		
2	Others, if any		
2.1	Butter (kg)		
2.2	Cheese (kg)		
	Total		

*** *indicates that raw/fresh milk is the primary interest of this study.*

9.3 For how long you sold milk to your dairy cooperative in the last year (2001 E.C)?

Duration in milk delivery to cooperative	*Score*
Only for less than 1 month	0
For 1 to 3 months	1
For 3 to 6 months	2
For 6 to 9 months	3
For more than 9 months	4

10. Indebtedness

A schedule is developed to measure indebtedness. The respondents will be categorized into the following groups on the basis of the total debt they had at the time of the interview and the scores assigned are as follows.

Item	Score
No Debt	0
Debt up to Br 500	1
Debt up to Br 1500	2
Debt up to Br 2500	3
Debt up to Br 3500	4
Debt up to Br 4500	5

11. Availability of market information

How do you get market information on supply, demand and price of dairy product in the markets?

Item	***Use code here***	***Source of information***
Supply		1= traders, 2= radio, 3=Telephone, 4= broker, 5= personal observation, 6 = News paper, 7= others
Demand		
Price		

12. Cooperative milk price

1. Did you sell milk to other marketing agents in 2001 E.C.?

Yes= 1 and 0, otherwise.

2. If yes, to which marketing agents you sold? (Encircle the appropriate response.)

Local market (Hotels, Restaurants, Cafeteria)

Consumers (local market, district market)

Traders in the district market

Others/ specify_____

3. If yes to 1, why you sold to these agents?

The cooperative was not ready to purchase

Lack of coincidence (the day you sold and the purchasing day of the cooperative

Couldn't coincide)

Price difference/the cooperative didn't charge competitive price

Others/ specify_____

4. If yes to 1, how much was the quantity of milk sold?

S.No.		Total Quantity Sold(Litres)

	Dairy Product	2001E.C Sales	
		Quantity(Litres)	Average Price received(EBR)
1	Raw Milk		
2	Others, if any		
2.1	Butter (kg)		
2.2	Cheese (kg)		
	Total		

13. Days of fasting

13.1 Do you undertake any fasting in connection with your religious faith? Yes=1,No=0

13.2 If yes for 13.1, how many days do you fast in a year? __ days.

13.3 Is your marketing participation in dairy cooperative is the same during fasting period and non-fasting period? Yes =1, and No=0

13.4 If No for 13.3, during which period your participation is better?

During non-fasting =1, during fasting =0

13.5 During fasting period, does your cooperative receive/purchase all the milk you brought to it? Yes=1, No=0

13.6 If your answer is No to 13.5, what is the fate of your milk rejected by your Cooperative?

1. Used for non-fasting family members
2. Sold to other marketing agents
3. Converted to other dairy products like butter and cheese
4. Others(specify) _____

If you sell to other marketing agents during fasting period, specify these agents.

3. Hotels, Cafeterias and restaurants

4. Milk assemblers in the locality

5. Selling to other household/s in the village

6. Selling to traders in the district market

7. Others(specify) _____

Part III: Situational characteristics

***1*. Position of a member in Cooperative**

1.1 Are you in charge of any position in the cooperative governance in your area?
Yes = 1, No = 0
1.2 If yes, indicate the type of your position in the cooperative society.

	Type of position in a cooperative	Score(weight given)
1	Member	1
2	Office bearer	2
3	Leader	3

1.3 If yes, what is the duration you spent being in position in cooperative?

	Duration in position	Score
1	0-6 months	1
2	6 months-2 years	2
3	2-3 years	3
4	>3 years	4

***2*. Information seeking behavior**

***2.1* Amount of information needed and Frequency**

Activities	Amount of information needed	Frequency of information needed
Quality and hygiene aspect		
Grading and standardizing		
Transportation equipment		
Price and demand		
Processing		
Credit		
Storage		
Seasonal operation		
Market information		

Amount of new information wish to get: 0= No information 1= some information 2= All

information. Frequency of seeking information: 0= Never 1= Rarely 2=sometimes 3= mostly

2.2 To whom do you share the information you have about dairy?

* Neighbors =1, Relatives = 2, members of coops = 3, non -members = 4, others =5

3. Extension participation

3.1 Do you have any contact with development agent in your local area?
Yes = 1, No = 0
3.2 If yes, what is the frequency of contact?
Once in a week (1)
Once in two weeks (2)
Once in three weeks (3)
Once in four weeks (4)
Others (specify) _____
3.3 If No, why? 1= No DA nearby, 2= No need of service 3= others (specify) _____
3.3 What type of services you are getting from DAs
1= Technical guidance
2= Theoretical support
3 = Input supply
4= Marketing aspect
Have you ever participated in extension planning last year?
Yes = 1, No = 0
If no why?
1 = Not invited
2 = others specify _____
If yes, in what extension planning you have participated?
1 = Problem identification
2 = Current Situation analysis
3 = Evaluation of the past year achievement
4= Setting alternative situations
5= others (specify) _____

S.N	***Type of information***	****To whom you share***
1	Transportation and quality	
2	Storage of feed and dairy product	
3	Pricing	
4	Market information	
5	Demand for dairy product	
6	Supply of dairy product	
7	Processing of milk	
8	Grading and standardizing	

What was your contribution in extension planning?

1 = Information supply

2 = others specify_____

Have you participated in extension training last year? Yes = 1, No= 0

3.9. If yes, in what livestock extension training, you have participated?

1= General

2 = Management

3 = Housing

4 = Marketing

5 = Feeding

3.10. How frequently do you get the training?

1 = Once in a month

2 = Once in three month

3 = Once in a year

4 = other specify_____

3.11 If no, why?

1 = Not invited

2 = Not interested in the program

3 = other specify

4. Access to credit

4.1 Do you have access to credit? Yes = 1, No = 0

4.2 If yes, from where do you get the services?

1 = Dairy cooperatives

2= Local money lenders

3= Microfinance

4 = others (specify) _____

4.3 If no, why?

1= High interest rate

2 = No need of credit

3 = Lack of collateral

4 = Fear of inability to repay

5 = No credit service available

6 = others (specify) _____

4.4 What is the purpose of getting the credit?

1 = Construction of dairy cattle house

2 = Purchase of Milking equipments

3= Purchase of cross breed cows

4 = for marketing finance

5 = others (specify) _____

5. Distance to the nearest Dairy Cooperative's milk collection centre

1. How many hours you need to travel to get the following? (On foot)

1.1. Cooperative _____ hours

1. 2. Local market (if any) _____ hours

1.3. Local assemblers (if any) _____hours

1. 4. The district market _____ hours

2. By what means you usually take your produce (milk) when you sell?

2.1. Own carrying

2.2. Using donkey/s

2.3. Using carts

2.4. Using trucks

2. 5. Others (specify) _____

3. If Yes to 2.1 above, on average how many hours you spent in a journey to sell the milk to your cooperative? ____ hours.

4. When you sell the milk to other marketing agent(s), where do you get them?

4.1 At the farm level

4.2 At the district level

4.3 At the local market

4.4 On the main road to your village

4.5 Others/ specify _____

Part IV: Psychological characteristics

1. Training undergone in dairy marketing

1.1 Have you participated in any training program in dairy marketing or dairying?

Yes = 1 No =0

4.1 Please indicate name, duration and type of training?

4.2

S.N.	*Name of the training program*	*Duration*	*Venue*
1			
2			
3			

2. Perception about dairy cooperatives

Please indicate your agreement with the following statement in the space provided to you

S.N.	Statements	Measurement scale		
		Agree=2	Disagree=1	Undecided=0
1.	I see dairy cooperatives as government organ.			
2.	Dairy cooperatives do not have sound pricing method.			
3.	Dairy cooperatives are not the best alternative for my success in			

	dairy activities			
4.	Dairy cooperatives can provide advice on technical knowledge in dairy marketing			
5.	Dairy cooperatives are poor in dairy marketing			
6.	Dairy cooperatives are inefficient in overall operation in marketing			

3. Communication skill

S.No	*Reception skill*	*Always=2*	*Sometimes=1*	*Never=0*
1	Do you listen when another member tells about dairy marketing?			
2	Do you become annoyed when the other member speaks?			
3	Do you start interpret him before he finish what he says?			
	Processing skill			
4	When another member tells you about new ways of doing dairy marketing that makes it profitable, do you follow your own way?			
5	When you get new information about dairy marketing do you see first the feasibility?			
6	When you understand new method of dairy marketing, do you predict quickly that you can do it in best way?			
	Expression skill			
7	Do you disseminate the accurate information about dairy marketing to another member?			
8	Do you convince the other member while disseminating the information regarding dairy marketing?			
9	Do you explain the information about dairy marketing to the other member with honesty?			
	Feedback orientation			
10	When explaining any information regarding dairy marketing to another member, do you elicit questions from him?			
11	When the other member asks questions about dairy marketing, do you fill happy to explain it further with happy motive?			
12	If the other member asks questions again and again, do you explain with out showing any irritation?			

Part V: Marketing Participation

In order to measure the marketing participation of members in dairy Cooperatives, the following schedule is developed.

S.no	Components of marketing participation	Regularly (3)	Sometimes (2)	Never (1)
1	Decision Making with respect to Dairy Marketing through cooperatives			
2	Involving in the Dairy Marketing functions of the Dairy Cooperatives			

Part VI: Constraints in dairy marketing

1. Have you faced any problem with regard to maintaining the quality of milk to the standard kept by the coop?

Yes = 1, No = 0

1.1 If yes, what are the basic constraints?

1= Lack of awareness about the standard

2 = No one tell me about the quality from the coops

3 = since the coops quality control is week, I don't care

2. Have you faced problem regarding grading your dairy product according to the market demand? Yes = 1, No =0

2.1 If yes, what are the constraints you faced?

1 = No information about grading of dairy product

2 = Lack of awareness about grading of dairy product

3 = since the coop does not require me to submit in grade, I don't bother.

3. If you have access to credit, have you ever faced any constraints on access of credit? Yes = 1, No = 0

3.1 If yes, what are the main constraints you faced?

1. Unavailable on time
2. Unable to remit down payment
3. Lack of credit
4. Lack of collateral
5. High interest rate
6. Others (specify) _____

4. If you have access to market information from cooperatives, have you faced any constraints on accessing market information? Yes = 1, No = 0

4.1 If yes, what are the main constraints you faced?

1 = Unsystematic and unreliable information

2 = It is not timely

3 = It is not accurate

4 = It is not comprehensive information

5. If you have access to storage and transportation facilities from the coop, have you faced any problem regarding this? Yes = 1, No = 0

5.1 If yes, what are the common constraints you have faced?

1 = Lack of coordination and inefficiency from the coops
2 = Low quality storage and defective transport system
3 = Others (specify) _____

6. Have you faced any problem regarding the collection of milk by the coops? Yes = 1, No= 0

6.1 If yes, what are the main constraints in the collection procedure of the cooperatives?

1 = No coordination and quality control at the collection spot
2 = Long distance of the collection center from my residence
3 = Poor record keeping of submitted milk to the coop.
4 = other specify

7. Have you faced any problem regarding the payment system of the dairy cooperatives? Yes = 1, No = 0

7.1 If yes, what are the main constraints, you have faced regarding this?

1= defective payment system
2 = inconvenient payment system
3 = does not fit into my need
4 = others specify

4. Have you faced any problem in selling your milk in fasting days? Yes = 1, No = 0
5. If yes, what are the main constraints you have faced?

1 = Use it for home consumption
2 = Process it traditionally in home
3 = Low payment from the coop
4= others specify

6. Have you faced any problem because of the long distance between you and the collection center of the society? Yes = 1, No = 0

1 = Spoilage of milk early
2 = Loss of income
3 = Refusal of the coops to receive after the deadline
4 = Selling the milk to other traders
5 = other specify

10. Have you faced constraints on access to inputs? Yes = 1, No = 0

10.1 If yes, what are the main constraints you have faced?

1 = Poor quality of inputs
2 = Insufficient delivery
3 = Source from far distance
4 = Less extension support
5 = others specify

11. If you got any training in dairy marketing, have you faced by problem? Yes =1, No= 0

11.1 If yes, what are the constraints you have faced?

1= It is theoretical
2 = It is for few days
3 = If others, specify_____

12. Do you use your own transport system for getting the milk to the dairy coops?
Yes = 1, No = 0

12.1. If yes, what are the constraints you have faced regarding this?

1 = Costlier to sell the milk to the society since transport is higher

2 = Wastage of milk due to traditional transportation

3 = risk of reduction in amount, since it is transported by children and women

4= others, specify_____

13. Do you regularly sell your milk to the society? Yes = 1, No = 0

If No why?

1 = No incentive from the society

2= Lower price from the society

3 =Long distance from the society

4 = others specify_____

14. Do you think selling milk is sinful (out of cultural traditions)?

1 = Yes, No = 0

14.1 If yes, why?

1 = traditionally it is sinful

2 = milk is to be given freely rather than sold

3 = others, specify_____

15. Are you willing to give one litter of milk for free to your cooperative for its growth? Yes = 1, No = 0

1. If you have any other constraints, Please put forward.

_____

_____

Part VI: Suggestions for improvement

2. What are your suggestions for improving effective participation of members in dairy marketing?

S.no	Suggestions	Most Important (3)	Important (2)	Least important (1)
1				
2				
3				
4				
5				
6				

Thank You Very Much for Your Cooperation!

Appendix 3.Checklist for Focus Group Discussion (FGD)

Checklists for Focus Group Discussion with officials of dairy Cooperatives, village leaders, reputed elders, and marketing experts from both the woreda and Zonal Cooperative promotion offices.

- How do you see (evaluate) the level of marketing participation of members in dairy cooperatives? In terms of

1.1 volumes of milk sales to their dairy cooperatives_____

_____

_____

1.2 purchases of cattle feed _____

_____

- Receiving(Obtaining) of timely and reliable market information with respect to dairy marketing

_____

_____

2. What factors, do you think, influence marketing participation of members in your dairy cooperative or other dairy society found in your vicinity?(clearly distinguish the factors with their influence on participation as positive or negative) _____

3. What are the main constraints that hinder members from effectively participating in their dairy marketing? _____, _____,_____,_____, _____,_____,_____, _____, …

4. What should be done to improve the marketing participation of members in their dairy cooperatives?

_____
_____
_____

Appendix Table 1. Contingency coefficients of the hypothesized 16 discreet explanatory Variables

Variables	SEX	MAR_STA	EDU_LEV	EXP_DM	AN_INC	MPU_COOP	INDEBT	AVA_MINFO
SEX	1	0.041	0.130	0.155	0.169	0.046	0.059	0.081
MAR_STA	0.041	1	0.190	0.040	0.179	0.055	0.019	0.040
EDU_LEV	0.130	0.190	1	0.309	0.340	0.122	0.133	0.126
EXP_DM	0.155	0.040	0.309	1	0.275	0.271	0.056	0.222
AN_INC	0.169	0.179	0.340	0.275	1	0.408	0.113	0.179
MPU_COOP	0.046	0.055	0.122	0.271	0.408	1	0.27	0.108
INDEBT	0.059	0.019	0.133	0.056	0.113	0.27	1	0.057
AVA_MINFO	0.081	0.040	0.126	0.222	0.179	0.108	0.057	1

Source: Computed Survey data, 2010.

Appendix Table 2. Contingency coefficients of the hypothesized discreet explanatory Variables (Continued)

Variables	COOPPM	PO_COP	INFO_BHV	EXT_PART	AX_CRD	TRG_DMKT	PRCP_COOP	COM_SKL
COOPPM	1	0.045	0.026	0.153	a	0.201	0.065	0.041
PO_COP	0.045	1	0.332	0.261	a	0.309	0.063	0.330
INFO_BHV	0.026	0.332	1	0.423	a	0.253	0.252	0.484
EXT_PART	0.153	0.153	0.423	1	a	0.405	0.271	0.387
AX_CRD	a	a	a	a	a	a	a	a
TRG_DMKT	0.201	0.309	0.253	0.405	a	1	0.133	0.264
PRCP_COOP	0.065	0.063	0.252	0.271	a	0.133	1	0.308
COM_SKL	0.041	0.330	0.484	0.387	a	0.264	0.308	1

a. No statistics are computed because Access to credit is a constant.

Source: Computed Survey data, 2010.

COOPPM=Cooperative price for milk, PO_COP=Position of a member in a Cooperative, INFO_BHV= Information Seeking Behavior, EXT_PART=Extension Participation, AX_CRD=Access to Credit, TRG_DMKT=Training Undergone in dairy Marketing, PRCP_COOP=Perception about Cooperatives, COM_SKL = Communication Skills

Appendix Table 3.VIF of the continuous explanatory variables (Xi) hypothesized for the Study

S.no	Variables	R^2	Variance Inflation Factor(VIF)
1	AGE	0.008	1.008
2	FM_SZ	0.007	1.007
3	SZ_LHO	0.000	1.000
4	NO_MCWS	0.028	1.028
5	PRO_DY	0.017	1.017
6	D_F	0.004	1.004
7	DISMARK	0.028	1.029

Source: Computed Survey data, 2010.

FM_SZ=Family Size, SZ_LHO=Size of Land Holding, NO_MCWS=Number of Milking Cows, PRO_DY=Milk Production per Day, D_F=Days of Fasting, DISMARK=Distance to the nearest Cooperative milk collection centre

Appendix Table 4.Number of livestock owned by respondents at present

S.N	Kind of livestock	Cross breed	Local breed	Total
1	Oxen	19	258	277
2	Cows	147	103	250
3	Milking cows	111	73	184
3	Young bulls	97	51	148
4	Calves	89	73	162
5	Heifers	43	89	132
6	Sheep	-	319	319
7	Goats	-	23	23
8	Chicken	95	245	340
9	Horse	-	41	41
10	Mule	-	8	8
11	Donkey	-	132	132

Source: Primary Survey data, 2010.